BLOCKCHAIN TECHNOLOGY

Gabatarwa

Wannan babi na ɗauke da fayyaceccen bayani akan fasahar Blockchain; ma'anarsa, ginshiƙansa, tsarukansa da yadda zai kawo chanji mai ma'ana a al'amuranmu na yau da kullum. Babban maƙasudin rubuta wannan babban shi ne domin na fayyacewa al'ummar Arewa yadda fasahar Blockchain take da yadda take aiki a fannoni da dama. Wannan babin zai kasance matashiya ga masu karatu wajen fahimtar Blockchain da ayyukansa ta yadda zasu samu haske wajen faɗaɗa bincike akan fasahar.

BLOCKCHAIN

A yanzu muna zamani na fasaha, kimiyya da ƙirƙira, ko da yaushe samar da sabbin dabarori da tsare-tsare ake domin kawo chanji mai ma'ana a mu'amalolin da muke yi yau da kullum a cikin duniyarmu ta zahiri.

Kafin zuwan Internet, al'umma suna gudanar da rayuwarsu ne a gargajiyan ce, amma zuwan Internet ya chanja kowanne fanni na rayuwar al'ummah, tunda daga fannin sufuri, ilimi,tsaro, cinikayya harma da bangaren lafiya. Mutanen wannan zamani sun kasance suna rayuwa ne a duniyoyi guda biyu, suna amfani da duniyar zahiri a matsayin gurin zama yayin da suke amfani da duniyar Internet a matsayin gurin aiwatar da ayyuka. Rayuwa babu Internet a yanzu ta zama rayuwar kunci saɓanin a baya da babu ita gaba ɗaya. Sauƙaƙe ayyuka da samar da mafita ga matsalolin da al'ummah ke fuskanta a duniyar zahiri yasa komai ke ƙoƙarin komawa duniyar Internet. Zamu iya cewa Internet kamar wata duniya ce ta baɗini wadda bama zama a cikinta amma muna iya gudanar da ayyukanmu da mu'amalolinmu a ciki. A bangaren kasuwanci zamu iya ganin yadda Internet ta chanja salon kasuwancinmu da salon mu'amalolin kuɗaɗenmu, a yanzu kana iya sayen kaya kuma ka biya

kayan duk a duniyar Internet kuma a kawo maka kayan a duniyar mu ta zahiri. Wannan fasaha ta ƙirƙira tana samuwa ne saboda zurfafa bincike da samar da sabbin dabarori don magance kowacce matsala da al'ummah ke fuskanta.

Abubuwa da muke da su a wannan duniyar ta zahiri ana ƙoƙarin ganin an samar da madadinsu a duniyar Internet, hakan yasa aka samar da makarantu, shafukan jaridu, shaguna, ma'aikatu harma da bankuna duk a duniyar Internet. Kowanne abu da aka samar a duniyar Internet ana sanya alaka tsakaninsa da na duniyar mu ta zahiri. Kamar yadda zaka iya zuwa makaranta ka yi karatu haka zaka iya yin karatu akan Internet. Haka kasuwanci ma, zaka iya sayen kaya a duniyar Internet kuma a kawo maka kayan a duniyar zahiri.

Duniyar Internet ta zo ta iske muna amfani da nau'ikan kuɗaɗen zahiri wajen yin cinikayya, domin kara sauƙaƙe cinikayyarmu sai ta samar mana da digital money, ma'ana kuɗaɗen da babu su a zahiri amma muna ganin lambobin adadinsu a kwamfutoci ko a wayoyinmu, irin wannan kuɗaɗen na digital da su muke amfani wajen yin mu'amalolin kudi ta hanyar banki dake duniyar mu ta zahiri.

A hankali ana kara samun ci gaba sai aka fahimci kuɗaɗen da muke amfani da su na digital kuɗaɗe ne da basu da bambanci da kuɗaɗen takarda ta fuska hawa kan tsarin centralization wanda ya iyakance ikon gudanarwar kuɗaɗen a karkashin tsirarin mutane ko cibiyoyi. Hakan sai ya zama wani babban ƙalubale da duniya ke fuskanta, domin a magance wannan ƙalubale ne aka samar da kudaden Cryptocurrency a matsayin kuɗaɗen da zasu bawa al'ummah cikakken yancin yin mu'amala batare da fuskantar ƙalubale daga gwamnatoci da cibiyoyin kuɗaɗe ba. Wannan gagarumar nasara bata samu ba sai da taimakon fasahar Blockchain.

Menene Blockchain?

Blockchain: Kalmomi ne guda biyu (Block-chain) wanda aka dunkule su a matsayin kalma daya.

Block: Na nufin wani abu mai karfi kamar dutse ko karfe ko icce da ake amfani da shi don tare wani abu. misali, katangar gidanka da kayi domin hana mutane kallon sirrin gidanka, kwali da ake zuba kaya a ciki domin hana kayan faduwa ko lalacewa cikin sauki, hatta kofar gidanka da ka yita domin ka shiga gidanka sannan ka rufe don hana wani shiga sai da izininka. Duk abinda zaka aje shi da niyar ya tare maka wani abu ko kuma abinda zaka iya saka wani abu a ciki domin ka boye abin cikin tsaro da aminci to shi ake kira da "block"

Misalin yadda Block yake

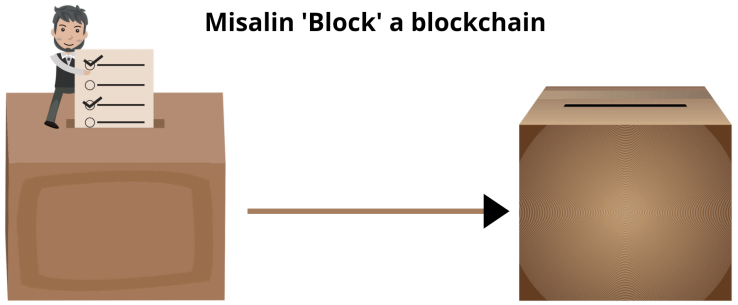
A takaice duk abinda zai hanaka taba wani abu dake bayansa ko cikinsa to ya zama block. Sannan duk abinda za'a aje domin killace wani abu dake gabansa ko bayansa to ya zama "block". Misali, idan kana tafiya akan hanya inda akwai checkpoint na jami'an tsaro zaka ga sun sanya durom ko katon ice sun tare hanya wanda ba zaka iso gurin ba sai sun baka izini. Wannan abin da aka yi amfani da shi wajen hana wucewar za'a iya kiransa da "block"

Misalin 'Block'

Shinge da ake ajewa a hanya don hana wucewa ta hanyar

Amma akwai bambanci da block din block chain da kuma block din da muka bada misali duk da yake amfanin su daya ne, watau domin a tare wani abu ko domin a killace wani abu. Block a blockchain kamar akwati ne ko kuma kwali da kake zuba muhimman takardunka a ciki, don kada su bata, ko kada a sace ko kuma kada su lalace. Kaddara kana yawan mu'amalolin kudi da mutane da yawa, kila kana sayen gidaje ana baka takardun gidajen, ko kuma kana turawa wasu kudi kaima ana turo maka. Duk wanda ka turawa ko aka turo maka sai ka rubuta a takarda ka saka takardar a cikin akwatin ka rufe.

Misalin 'Block' a blockchain

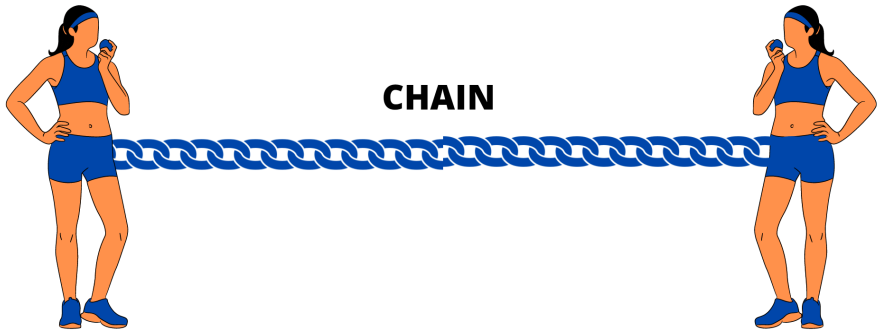


Kaddara kana da akwati nan da yawa, akwati akwai kalar takardun mu'amalar da kake sanyawa a ciki. Wani akwatin kana zuba takardun kadarorin da ka saya, wani takardun kudin da ka tura, wani takardun

kudin da aka turo maka.

Kamar haka block yake a cikin fasahar Blockchain, kowanne block a cikinsa akwai muhimman bayanai a ciki.

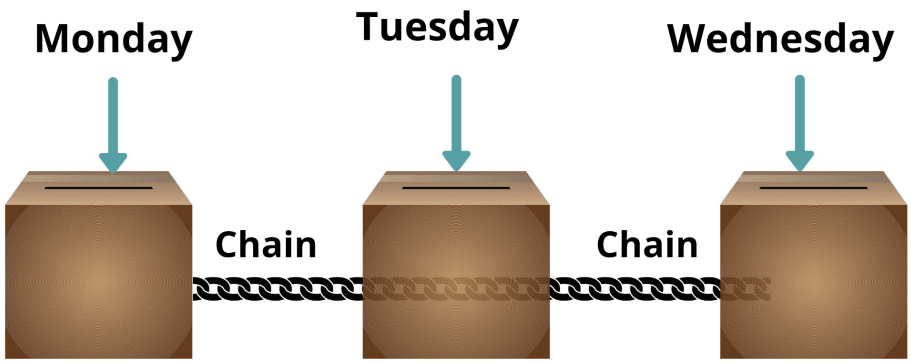
Chain: Na nufin duk abinda ake amfani da shi domin hada tsakanin wani abu da wani abu daban. A turanci ana kiran sarka da chain domin ana amfani da ita wacen daure tsakanin wani abu da wani abu, wani mutum da wani mutum, hannu da hannu. Duk abinda za'a yi amfani da shi domin jona jikin wani abu da wani abu shi ake kira da "chain"



Ko yaya dai, wannan fassarar kalmar ce a ma'ana ta harshe ba a duniyar fasaha ba. Sannin ma'anar kalmar matashiya ce ga fahimtar fasahar a zahirin yadda take.

A fasahar Blockchain chain na nufin sarka ko igiyar dake jona tsakanin block da block. Domin ka fahimci abin cikin sauki bari mu bada misali da akwatin takardun nan naka da muka bada misali a matsayin block.

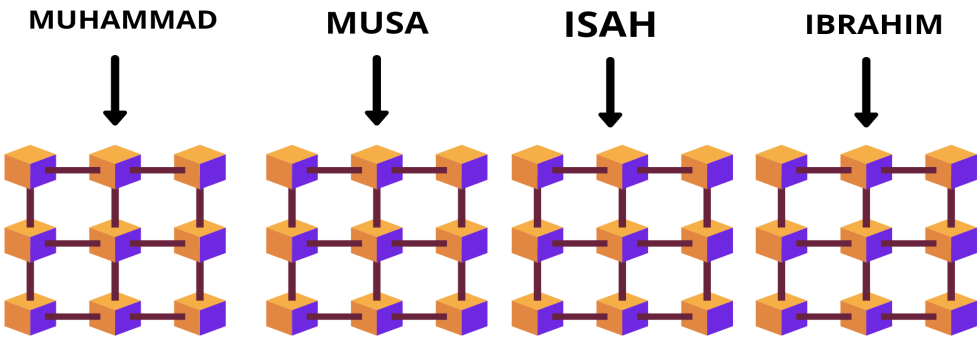
Kaddara kana da akwatin zuba takardun da yawa, idan wani ka turawa wani kudi sai ka rubuta ka aje takardar a acikin a kwati daya. Idan wanda ka turawa akwatin ya turo maka kudi shima sai ka rubuta saia takarda ka sanya a cikin akwati daban. Duk kudin da ka tura masa kana aje takardar kudin a akwati daban kaima duk kudin da ya tura maka kana ajewa a kwati daban. Idan ka tura masa kudi yau to akwatin takardar yau daban yake gobe ma idan ka tura masa ko ya tura maka akwatin takardar daban. Kowanne akwai na dauke da takardar mu'amalar da kuka taba yi da shi guda daya. Amma kowanne akwati kana sanya sarka ka hada shi da akwatin mu'amalar da kuka yi na gaba. Ma'ana akwatin monday kana sanya sarka ka jona shi da akwatin Tuesday, haka Wednesday haka kullum ma.



Kana sanya sarka din ne ka jona tsakanin su domin akkwatun suna da yawa, wani zai iya bacewa ka dinga shan wahalar nemansa. Sannan kana jona tsakaninsu zai taimakawa maka wajen saukin lissafa mu'amalar kudi da kuka yi. Idan ka lissafa akwati goma ne hakan na nufin mu'amala goma kuka yi. Idan ka so ka irga yawan kudin zaka dinga bude kowanne akwati kana duba takarda kana hada lissafin.

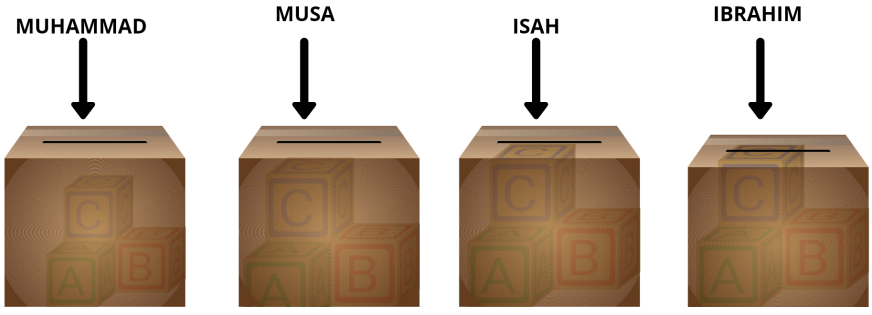
Da yake mutanen da kuke mu'amala suna da yawa sai kake ware akwatunan kowanne mutum da kuke mu'amalar da shi daban. Ma'ana

rukunin akwatin Muhammadka sanya sarka ka daure su daban, akwatin Musa ma haka, haka Isa haka ma Ibrahim.



Hakan na nufin bayan kana ware akwatin kowacce mu'amalar daban sannan kana sanya sarka kana jona tsakanin mu'amalolin, kana aje akwatunan mu'amalar da kuka yi da kowanne mutum daban.

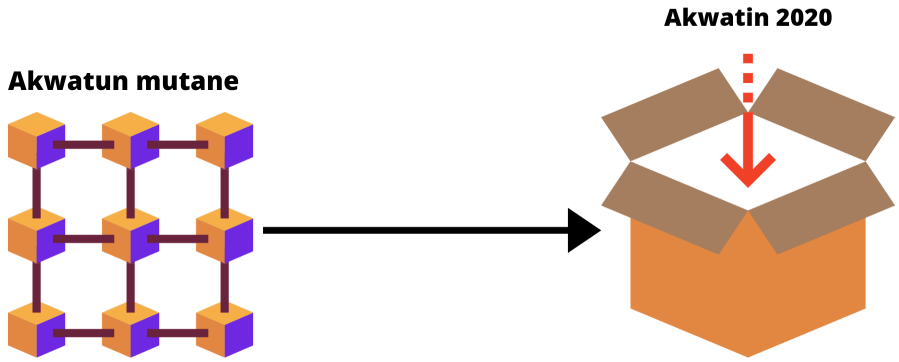
Da yake mutanen na da yawa sosai, sai kake zuba akwatunan takardun mu'amalar da kuke yi da kowanne mutu a cikin babban akwati. Hakan na nufin akwatin Muhammad na dauke da akwatuna a ciki da yawa, cikin kowanne akwati kuma akwai takardar mu'amalar da kuka yi a kowacce rana.



Kada ka manta kowanne akwati kana rufe shi da kwado kana adana mukullin, a jikin kowanne makulli akwai lambar akwatin da yake budewa.

Bayan kowacce shekara kana hada manyan akwatunan kana sakawa cikin babban akwatin da kaware don zuba gaba daya akwatunan mu'amalar da kayi kowacce shekara.

Akwatinan mu'amalolin da kuka yi da kowanne mutum, ka sanya sarka ka daure su kuma ka saka su a akwatin aje akwatunan mu'amalar da kayi kowacce shekara



ABIN LURA.

Yadda kake ware takardun kowacce mu'amala a cikin akwatin daban haka a blockchain kowacce mu'amalar tana rubuce a cikin block daban.

Yadda kake amfani da sarka wajen jona kowanne akwati da akwatin mu'amalar da ka yi na gaba, haka a blockchain kowanne block yana da jone da block din mu'amala ta gaba.

Sarkar da kake amfani da ita don jona tsakanin akwatin yau da akwatin gobe, wannan Sarkar ita ce kwatankwacin 'chain' a blockchain.

Yadda kake rufe kowanne akwati da makulli haka a block chain kowanne akwati yana da key.

Kana ware kowacce mu'amalar ne domin adana takardun daban-daban cikin tsarin da ba zaka sha wahalar neman wata takarda ba sannan babu

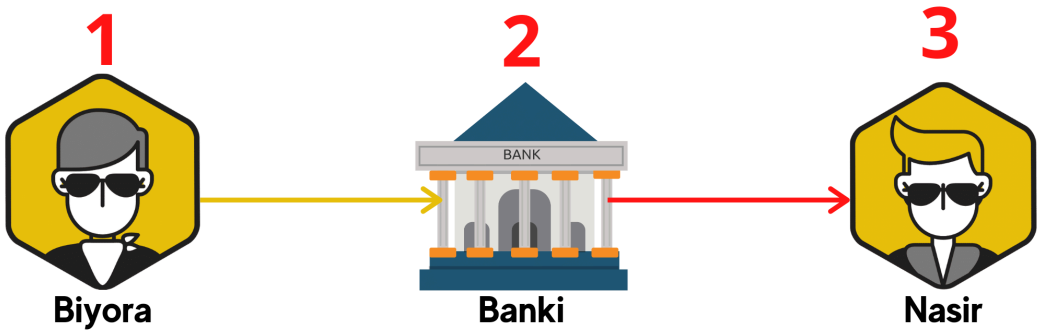
takardar da zata bace. Kamar haka Blockchain ke inganta ajiyar bayanan kowacce mu'amala cikin tsaro da tsari mai inganci.

Tunda mun fahimci ma'anar 'Block' da 'chain' sannan kuma mun fahimci yadda kowannensu yake da yadda kowanne ke aiki. To bari mu tsun duba cikin fasahar Blockchain gadan gadan don muga wanne al'amari ta zo mana dashi.

Blockchain: fasahace dake samar da aminci tsakanin mutum biyu ko fiye da haka su yi mu'amala ta kudi batare da wani ya cuci wani ba, kuma ba tare da kokonto ko fargaba ba sannan batare an zalunci wani ba.

Korafe-korafen da ake samu da jinkiri wajen mu'amalar kudi ta hanyar amfani da bankuna, da Korafe-korafen da ake samu na damfarar masu ajiyar kudi a bankuna yasa aka samar da fasahar Blockchain domin warware wannan matsala.

A gargajiyance, idan Biyora dake zaune a kano zai turawa abokinsa Nasir dake zaune a Abuja kudi N1000, zai tura kudin ne ta hanyar banki. Hakan na nufin kudin ba zasu turu ba sai an samu tarayyar mutane uku, Biyora da zai tura kudi shine mutum na farko, Nasir da za'a turawa kudin shine mutum na biyu, banki da aka yi amfani da shi shine mutum na uku.



Idan Biyora ya turawa Nasir N1000 dake asusunsa, bankin da Biyora ya bude asusun zasu rubuta cewa ya tura kudi zuwa ga lambar asusun

Nasir a ranar 1/1/2020 alal misali. Kafin banki ta tura kudin zuwa asusun Nasir sai an duba nawa Biyora yake da shi a asusunsa ? Shin kudin sun kai N1000 ko basu kai ba? Idan sun kai sai su tura kudin zuwa asusun Nasir, idan kudin sun shiga asusun Nasir kafin ya sani sai bankin ta rubuta a littafin aje bayanai cewa Biyora ya turawa mashi N1000 da ranar da aka tura kudin. Wannan shike kawo jinkiri wajen tura kudi daga wani mutum zuwa wani mutum ta hanyar banki.

Abu na biyu shine; kudadenka suna aje a asusunka na banki, wanda banki ta baka lambar asusu domin saukin gane asusunka saboda idan za ta yi amfani da sunanka wajen gane asusunka kila a cikin bankin akwai mai suna irin naka, domin haka sai bankuna suka samar da lambobi mabambanta a matsayin lambar asusu domin saukin ganewa. Yayin da kaje cire kudi a asusunka koda ka bada lambar asusun ba za'a yarda a baka kudin ba har sai ka bada tabbacin asusunka ne ta hanyar sanya hanu (signature) sanya hannun nan shike bada tabbacin cewa tabbass asusunka ne. A wannan yanayin kudadenka basu da cikakken tsaro domin wani zai iya zuwa banki ya bukaci a basa kudi kuma yayi irin sa hannunka (signature) daidai. A hankali zamani yazo aka fahimci shiga banki ka rubuta takardar izini don a ciri kudinka a turawa wani sai ya zama abu mai wahala. Daga nan aka samar da Online Bank wanda zaka iya sarrafa bankinka ta hanyar amfani da computer ko waya. Maimakon sa hannu (signature) da kake yi idan ka je banki domin cire kudi ko turawa a matsayin shedar dake nuna kai ne mai asusun ko kuma da amincewarka, sai ake amfani da lambobin sirri a madadin sa hannu (signature). Hakan ya kawo sauki sosai a bangaren mu'amalar kudade fiye da lokaci baya da dole sai kaje banki, sai dai yan damfara na amfani da wannan wajen sace kudaden mutane. Domin magance wadannan matsalolin na jinkiri da rashin tsaro sai aka samar da wata fasaha wadda zata hana jinkirin kuma ta samar da tsaro, wannan fasahar ita ce ake kira da "Blockchain"

Wannan fasaha tazo da sigar da Biyora zai turawa Nasir kudi kai tsaye batare da amfani da banki wanda tsarukansa ke haifar da jinkiri ba. Ma'ana ta samar da hanyar da Biyora zai turawa Nasir kudi cikin sauri kamar ace suna kusa da juna sai ya mika masa hannu da hannu.

Toh, ya za'ayi Biyora dake kano ya mikawa Nasir dake Abuja kudi hannun da hannu? Idan Biyora ya turawa Nasir kudi ta banki, bankin ne ke aje sheda idan daga baya Nasir yace Biyora bai tura masa kudin ba sai banki ta bada shedar da ta aje. To yanzu da aka cire banki a cikin Ma'amalar waye zai zama sheda kenan? Ada kudin Biyora a banki yake ajewa yanzu kuma da babu banki a mu'amalar ina Biyora zai aje kudinsa kenan? Domin sannin amsoshin wadannan tambayoyi dole sai mu san ginshikan da aka gina fasahar Blockchain da su, sannan kuma musan shika-shikan Blockchain, ma'ana abubuwan da yake gudanar da mu'amala da su.

COMPONENTS OF BLOCKCHAIN.

Wannan na nufin abubuwan da aka yi amfani da su wajen gina fasahar Blockchain. Kowanne abu da aka kera ko aka kirkira dole ne a samu abubuwan da aka yi amfani da su wajen kerawa ko ƙirkirar abin. Misali, Allah ya halicci dan Adam da kasa, ya halicci Aljanai da wuta sannan ya halicci mala'iku da haske. Haka duk wani abu da yake gudana a duniya dole ka samu abinda aka yi amfani da shi wajen kera abin. Idan Blockchain gida ne, to wadannan sune, bulo, siminti, ruwa, karfe da katakon da aka gina gidan da shi. Sannan idan Blockchain rumfa ce to wadannan sune ginshikan da suka rike rumfar. Ginshikan da aka gina fasahar Blockchain da su sune:

1. Cryptography
2. Peer to peer network (P2P)

3. Ledger.
4. Consensus mechanism

1. CRYPTOGRAPHY

Shin ka taba mamakin yadda kamfanoni kamar Facebook suke adana password dinka? Ko ka taba mamaki yadda bayanan katin cire kudi (credit card) ke kunshe a katin cikin sirri?

Amsar shine cryptography. Mafi yawan shafukan yanar gizo suna amfani da nau'in cryptography wajen samar da tsaro, da boye bayanai cikin sirri. Domin fahimtar mai cryptography ke nufi akwai bukatar mu yi bayani ma'anar kalmar dalla-dalla.

Cryptography: Kalmar 'Cryptography kalmomi ne guda (Crypto-Grapy) daga yaren Latin da aka dunkule su a matsayin kalma daya.
Crypto: Na nufin "Boyayye ko ɓoyewa"
Graphy: Na nufin "Samun ilimi ta hanyar karantawa, rubutawa ko bincikawa"

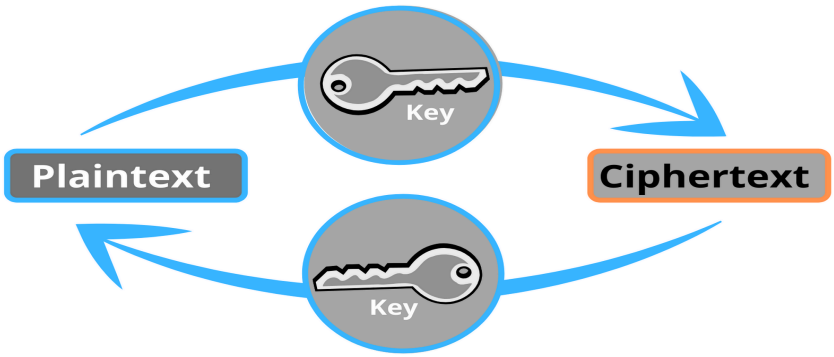
Idan muka hade kalmomin a matsayin kalma daya zamu fahimci, Cryptography wani ilimi ne na ɓoye bayanai ko ɓoye wani abu ta hanyar da baza'a kalli abin ko chanja shi ba.

Mene Cryptography?

Cryptography: Ilimin fasaha ne na tsara hanyoyin da zasu bamu damar adana bayanai cikin boyayyiyar siga ta yadda masu kutse ba zasu samu damar sanin bayanan ba. Hakan na nufin zamu iya amfani da cryptography wajen adanawa da boye bayanai kamar takardu (documents) , lambobin sirri (password) da sauransu akan computer dinka b tare da wani ya gansu ba.

Cryptography na bada damar aiwatar da wannan ta hanyar sauya bayanai zuwa wani siga na daban wanda ba zai iya fahimta ba (galibi

ana kiransa sigar da ciphertext ko code). Hanyar canza bayanai zuwa ciphertext ana kiranta encryption, tsarin dawo da bayanan yadda suke bayan an sauya su zuwa ciphertext ana kiranta da decryption. Encryption da decryption kamar kwado ne da mabuɗi. Yayin da aka boye bayanai kamar an kulle sune da kwado wanda shine Encryption, sannan idan aka bude bayanan kamar an bude kwadon da aka rufe bayanan da shi ne wanda shi ake kira da decryption. Yayin aiwatar da encryption da decryption ana bukatar amfani da bayanan sirri ko mabudai (keys)

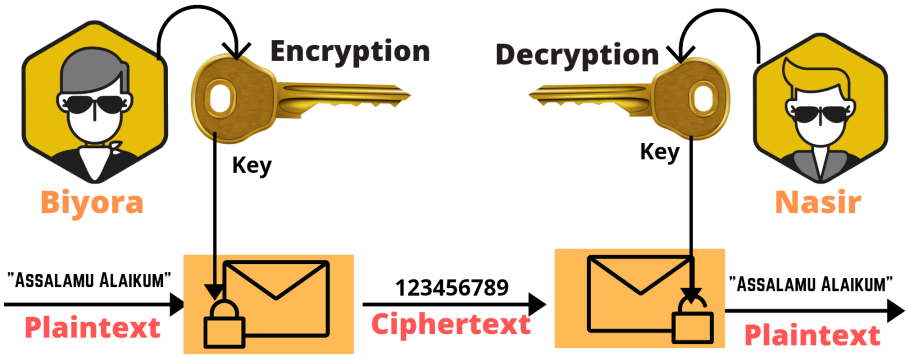


Wacce hanya ake bi domin boye bayanai cikin tsaro? A Cryptography hanyar da ake boye bayanai ita ce ake kira da "encryption"

Encryption

Encryption: Hanya ce ta sauya bayanai zuwa wata sigar wanda ba za a iya karantawa ba, don kare sirrin bayanan yayin tura bayanan, karbar bayanan da adana su. Wannan na faruwa ne ta hanyar maida bayanai zuwa sigar lambobi ko siga mai rikitarwa (ciphertext) wanda aka rufe da kwado. Misali, bayan ka gama rubuta "Assalamu Alaikum" sai ka yi amfani da encryption wajen mayarda "Assalamu Alaikum" zuwa lambabi, misali "123456789", hakan na nufin ka kulle harufan rubutunka saboda haka yanzun sun koma lambobi, a wannan sigar wani ba zai iya gane rubutun da lambobin suka kunsa ba sai kai ko kuma wanda ka bawa

mabudin bode bayanan. Duk bayanan da ka rufe da encryption za'a iya bude shine ta hanyar amfani da makullan da aka bude bayanan, amfani da makulli domin bude bayanan da aka sauya shine "decryption".

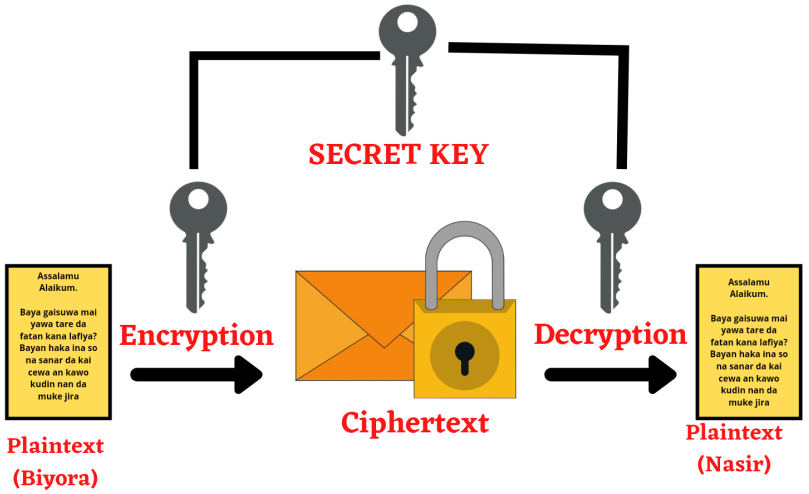


A Cryptography ana aiwatar encryption ta hanyoyi gudu kamar haka:

1. Symmetric-Key Cryptography
2. Asymmetric-Key Cryptography
3. Hash Functions

Symmetric-Key Cryptography

Symmetric-Key Cryptography: Hanya ce ta amfani da mabudi iri daya wajen kulle bayanai da bude su, hakan na nufin wanda ya tura sakon da wanda aka turawa sakon zasu yi amfani da mabudi daya da ake kira da "secret key" . Wannan hanya ce mafi sauki na sauya bayanai (Encryption) amma tana da rauni wajen tsaro. Misali, idan Biyora ya turawa Nasir wasika sai ya rufe wasikar (Encryption), irin key din da ya yi amfani wajen rufe rubutun dake cikin wasika, da irin key din Nasir zai yi amfani wajen budewa. Idan ya kasance yayi amfani da lambobi ne wajen rufewar, to wajibi ne shima Nasir yayi amfani da irin lambobin wajen rufewa.


SECRET KEY
Assalamu Alaikum.
Baya gaisuwa mai yawa tare da fatan kana lafiya? Bayan haka ina so na sanar da kai cewa an kawo kudin nan da muke jira
Encryption
Ciphertext
Decryption
Assalamu Alaikum.
Baya gaisuwa mai yawa tare da fatan kana lafiya? Bayan haka ina so na sanar da kai cewa an kawo kudin nan da muke jira
Plaintext (Biyora)
Plaintext (Nasir)

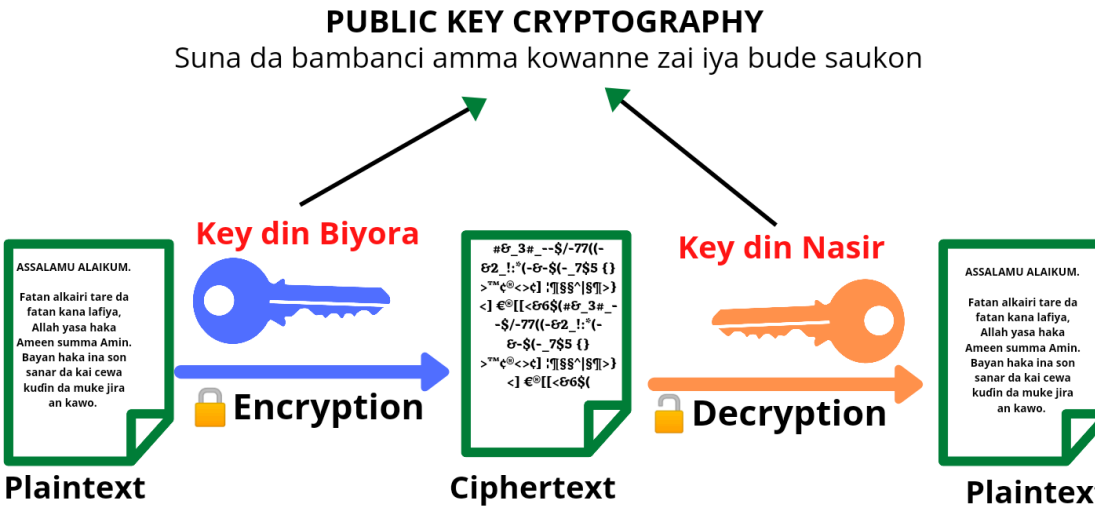
Yadda zaka fahimci Symmetric-Key Cryptography.

Ka kaddara Symmetric-Key Cryptography kofar gidan kuce, kowane dan gidanku za'a iya bashi mabudin kofar domin ya shiga gidan aduk lokacin da yaso. Amma dakin da ba naka ba a gidan za'a baka key din?

Kaddara kuma banki ne ba gidan ku ba. Idan kaso ka bude asusu a banki za'a hanaka ne? Ko idan kana so ka shiga banki ta kofa za'a hanaka? Abinda yasa ba za'a hanaka ba saboda Public door ce, ashe kuwa key nata zai kasance "Public key"

Asymmetric-Key Cryptography

Asymmetric-Key Cryptography: Hanyace ta amfani da mabudai guda biyu ko fiye da haka, ma'ana makullin kulle sakon daban da mabudin bude sakon. Mai tura sako da wanda za'a turawa sakon kowanne su na amfani da mabudi daban daban. Lambobin bude sakon da rufewa zasu zamaa cikin sirri babu wanda ya sansu sai mai tura sako da wanda aka turawa. Misali, key din da Biyora yayi amfani da shi wajen rufe rubutun wasikar daban sannan key din da Nasir zai yi amfani da shi wajen budewa daban.


PUBLIC KEY CRYPTOGRAPHY
Suna da bambanci amma kowanne zai iya bude saukon
Key din Biyora
Key din Nasir
ASSALAMU ALAIKUM.
Fatan alkairi tare da fatan kana lafiya, Allah yasa haka Ameen summa Amin. Bayan haka ina son sanar da kai cewa kudin da muke jira an kawo.
Encryption
Decryption
Plaintext
Ciphertext
Plaintex

Yadda zaka fahimci Asymmetric-Key Cryptography

Kaddara a gidanku kowa yana da dakinsa daban kuma kowanne daki akwai kofa, wannan kofar ita ce "Asymmetric-Key Cryptography" kofar kowanne daki akwai kwado wanda mai dakin ne kawai yake da key din budewa, wannan key din shine "secret key". Duk dan gidan na da damar shiga gidan ta hanyar bude kofar gidan da Public key, amma babu wanda zai shiga dakin kowa sai da izinin mai dakin.

Kaddara kuma kana da asusun banki, kana zuwa banki cire kudi, tura kudi ko aje kudi. Yayin shiga bankin akwai kofa, kai da sauran al'ummah kofar abude take kowa na iya shiga. Amma yayin da ka shiga bankin zaka iya cire kudi a asusu wani? Kafin ka cire kudi a asusun wani kana bukatar sa hannunsa lambar asusunsa da duk bayanan tantancewa. Wadannan bayanan da banki suke tantance masu asusu da su sune "Secret key" a fasahar Blockchain.

Hash Functions

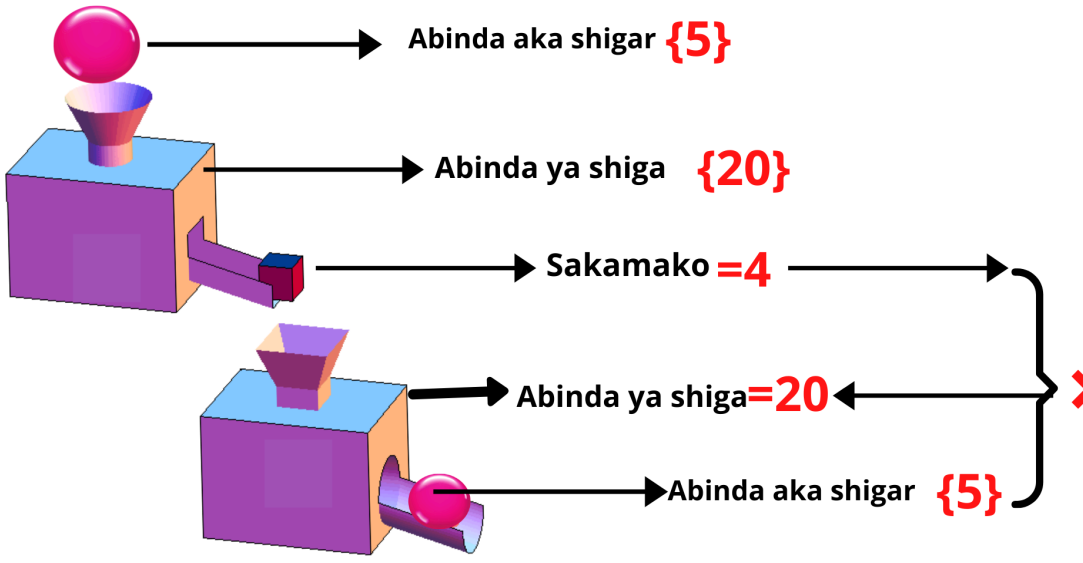
Domin fahimtar ma'anar wannan akwai bukatar mu yi bayanin ma'anar kalmomin guda biyu dalla-dalla.

Hash: Na nufin mulmula wani abu daga babbar siga zuwa karamar siga. Sannan tana iya daukar ma'anar abinda aka mulmula. A hausance idan aka ce mulmulawa ana nufin mayar da wani abu mai yawa ya koma karami ta hanyar dunkule abin. Misali, yadda ake mulmula gari ya koma tuwo.

Function: A lissafi (mathematics) function hanya ce ta shigar da lamba cikin wata lamba domin ta bada sakamako na musamman. Galibi lambar da ta bayar a matsayin sakamako idan ka yi sau (times) dinta da adadin lambar da ka shigar zai baka sakamako iri daya.

Misali,

5 ta shiga cikin 20 sau nawa?
Domin gane amsar za mu ce:
20÷5=4.
Saboda haka mu juya sakamakon muga ko zai ba mu daidai da lambar da aka shiga. Sakamakon mu anan shine "'4" yayin da lambar da aka shigar ita ne "5"
Saboda haka zai zama:
4×5=20.
Hakan na nufin ya bamu daidai.

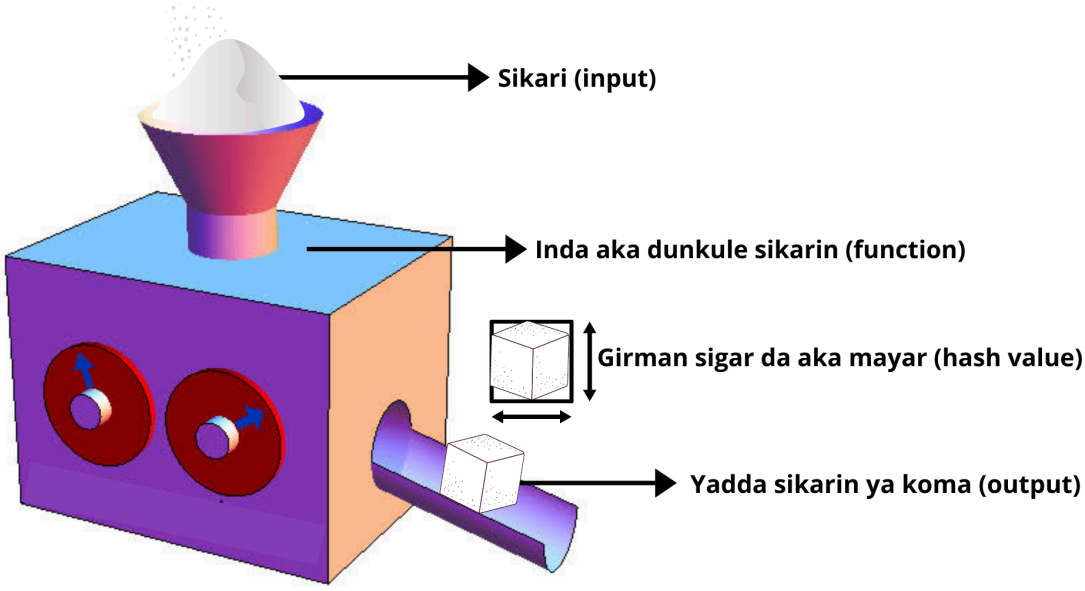


Idan muka hade ma'anonin kalmomin biyu (Hash Function) zamu iya cewa suna nufin " Dunkule bayanai"

Hash function: Hanyace ta dunkule da bayanai (data) daga sigar shi ta asali zuwa sigar da ake buƙata domin tabbatar da saƙon ya isa ba tare da an chanja sakon ba.

Hash Functions a Cryptography ba kamar sauran hanyoyin bane da suke bukata amfani da key wajen bude bayanai da rufewa, maimakon a haka hash function ana dunkule bayanan da yawan zuwa karamar siga mai rikitarwa da zata boye asalin bayanan ta yadda babu mai ganewa. Misali, kana son turawa abokinka sikari kwano daya. Kana tunanin kada kafin sakon ya isa hannun shi a dibi sikarin a hanya. Maimakon ka tura masa sikari sai kamayar ka zubawa sikarin ruwa ka daskarar da shi a cikin wata kwalaba ka aika masa da shi. A wannan yanayi, idan dan aiken yace zai dibi daskarerren sikarin nan to sai dai ya fasa kwalbar, idan kuma ya fasa kwalbar to abu mai sauki ne a gane an diba. Shi kuma wanda ka turawa sakon sai dai yayi amfani da daskararren sikarin amma ba zai iya mayar da shi asalin sikarin ba. To kamar haka hash function yake amfani a duniyar computer. Rubutaccen sako,takardu, bidiyo, sauti ko duk abinda za'a iya kiran shi da bayanai ta hanyar hash ana dunkule su ta yadda ba za'a iya chanjawa ba a tura su. Bayan da ake dunkule su ake kira da (input). Hanyar da ake amfani da ita don dunkule bayanan ana kiranta da "hash function". Bayan an dunkule bayanin yadda zai koma shi ake kira da "output" ko "hashed". Gwargwadon girman da aka mayar da sakon bayan an dunkule sa shi ake kira da "hash value".

- **Input:** Na nufin bayanan da za'a dunkule.
- **Function:** Na nufin hanyar kankantar da bayanai.
- **Hash value:** Na nufin girman sigar bayanin da aka dunkule.
- **Output:** na nufin sakamakon da bayanin yake badawa



Ana yin encryption domin kare bayanai, yayin da ana amfani da hash functions da nufin tabbatar da cewa fayil ko yanki na bayanai ba'a canza su ba. Misali, sai ka kawo mini littafi ajiya, domin in tabbatar da littafin da ka bani sai nayi amfani da hash function kamar haka:

- Gaba daya rubutun dake cikin littafin idan nayi amfani da hanyar dunkule bayani na hash function zai koma haruffa da lambobi kamar haka-*04f0ecc95159533982d7571eada5f8d76592b6e97ead964467c603d31b9e7a9c*

- Sai in kofe yadda ya koma na rubuta a jikin takarda na baka a matsayin sheda sannan na rubuta a jikin littafin na aje.

- Idan ka zo karba zaka bani takardar na duba na bincika wanne littafi ne.

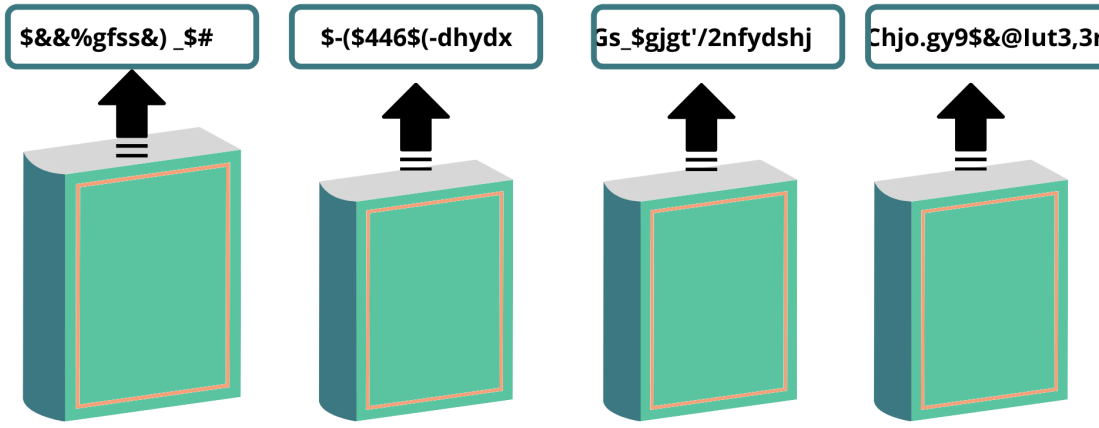
- Idan na ga littafin da ya yi daidai da wannan rubutun to shine naka.

- Idan kuma ka chanja rubutun to koda na duba ba zan gane littafin ka ba, domin littafin da ka bani shine nayi amfani da hash function ya fitar da rubutun da na baka.

- Koda akwai irin kittafin da yawa a wajena rubutun da na baka (output) sai sha bamban da rubutun dake jikin sauran littafin.

Wannan shine kwatankwacin yadda hash function amfani wajen tabbatar da bayanai. Wajen amfani da wannan hanyar akwai ka'idojin da ake amfani da su.

1. **Compression:** Bayanin da aka yi amfani da hash function wajen dunkule shi dole ya zam cikin karamar sigar da bata kai ta asalin bayanin kafin a dunkule shi ba.
2. **One-way:** Bayan an dunkule bayani izuwa wata sigar to ba za'a iya amfani da yadda ya koma a maida shi ya koma yadda yake kafin a dunkule ba.
3. **Collision resistance:** Bayanai iri biyu ko fiye da haka ba zasu taba bada sakamako daya ba idan an dunkule su. Hakan na nufin koda littafi iri daya sun kai guda 50 a wajena idan nayi amfani da hash function wajen dunkule kowanne littafi ya bani sakamako (output), idan na sake dunkule wani littafin irin wannan ba zai bani sakamako irin na littafin farko ba koda kuwa komai na cikin littafin iri daya ne.



Bankuna, shafukan yanar gizo kamar su Facebook, twitter da sauransu suna amfani da hash function wajen tantance password ko username kamar haka:

- Yayin da ka zo bude account misali a Facebook bayan da ka shigar wajen budewa kai tsaye ana harsh function nasu ne su bada wani sakamo sai a aje a database.

- Idan daga baya kozo log in na account naka, kana sanya password naka da lambar wayarka, kafin shafin ya bude sai an tantance bayanan da ka sanya din nan sun yi daidai kuwa?

- Idan sun yi daidai, hakan na nufin sakamon (output) da ke aje a database nasu yayi daidai da abinda ka shigar. Sai a baka damar shiga account naka.

Yadda zaka fahimci harsh function a blockchain.
Kadda a gidanku akwai mai gadi a kofar gidan, duk wanda yazo shiga sai ya tare shi ya tambaye shi. Sannan duk wanda ya shiga mai gadin na kula da abinda yake yi. Idan wani ya yi kokarin shiga dakin da ba nasaba dan yayi barna mai gadin zai hana shi. Idan barawo ya zo yin sata a

gidan ba zai samu dama ba domin masu gadin gidan na ta ko ina. Wannan mai gadin shine "hash function"

ABIN LURA

Cryptography shine fasaha ta farko da aka yi amfani da ita wajen gidana fasahar Blockchain. Kafin gudanar da komai kana bukatar tsaro da aminci, shi yasa aka yi amfani da hanya boye bayanai da tabbatar da tsaro na Cryptography don gina fasahar Blockchain. Idan fasahar Blockchain banki ne to Encryption shine gurin boye abubuwa masu mahimmanci da suka shafi kudade, bayanai da sauransu . Public key shine kofar bankin wanda kowa zai iya shiga ya yi mu'amala. Secret key shine bayanan sirri na kowanne mai asusu a bankin. Hash functions kuwa sune ma'aikatan bankin tun daga masu gadi, masu tantance mu'amaloli da masu gudanarwa. Cryptography shine fasahar da zata wakilci aikin da ma'aikatan bankuna suke yi.

Da yake mun ce fasahar Blockchain ta zo da salon da za'a yi mu'amaloli ba karkashin gudanar wata cibiya ko wasu ma'aikata ba. To wacce fasaha aka yi amfani da ita a wannan bangaren? Mun ji dai fasahar da aka yi amfani da ita wajen maye gurbin ma'aikatan banki saura muji fasahar da aka yi amfani da ita da zata maye gurbin bankuna ta yadda za'ayi mu'amalolin kudi ba tare da amfani da banki ba. Bari mu yi nitso cikin bayanin fasahar da aka gina Blockchain da ita na biyu.

2. Peer to Peer (P2P)

Network ne dake hada computer da computer suyi musayar bayanai kai tsaye ba tare da wani shinge a tsakaninsu ba. Peer to Peer sadarwa ne tsakanin kwamfutoci biyu ko fiye da haka su yi musayar bayanai kai tsaye. A misalin duniyar zahiri, peer to peer na iya daukar ma'anar isar da sako hannu da hannu ba tare da dan aike ba. Kalmar peer to peer za'ayi kiranta da "hannu da hannu". Isar da sako hannu da hannu na nufin mai tura sako ya isar da sako ga mai karba kai tsaye. Misali, ina son na rubuta wasika na aika maka da wasikar sai na bawa dan aike ya kai

maka wasikar. A wannan yanayi wasikar ta bi ta hannun dan aike, yayin da na bawa dan aike wasikar to tabar hannuna sannan bata isa hannunka ba, hakan na nufin wasikar tana a hannun dan ake kenan. Ni dai na tura wasikar nine 'peer' dan aike wanda wasikar take hannunsa shine "server' wanda dan aiken zai kaiwa wasikar shine "peer". A wannan yanayi wasikar zata isa ba peer to peer ba ma'ana hannu da hannu, wasika zata isa ne a sigar Peer-server-peer. Amma idan ya kasance bayan na rubuta wasikar na dauki wasikar na baka hannu da hannu, hakan na nufin munyi amma da sigar isar da sako ta Peer to Peer.

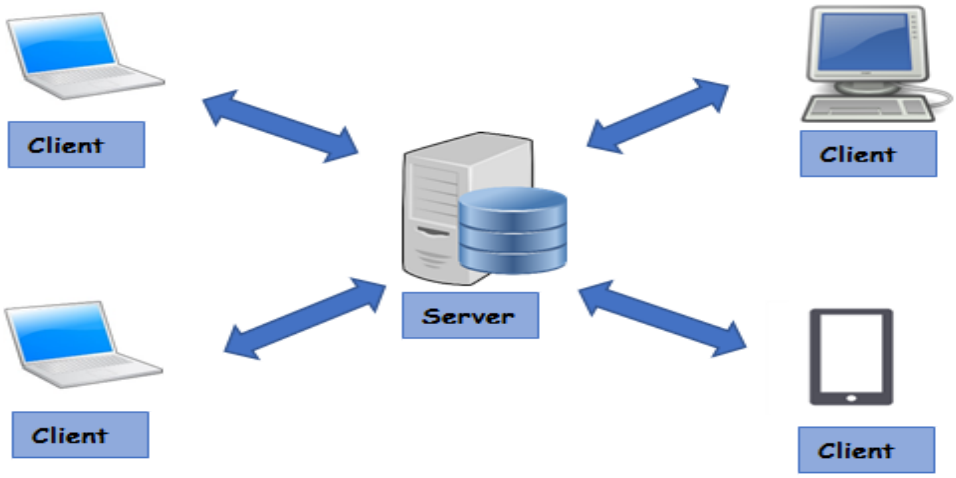
A fasahar zamani, peer to peer na faruwa ne idan ya kasance kwamfuta zata tura sako zuwa wata kwamfuta din ba tare da sakon ya tsaya a server ba.

Ta hanyar amfani da wannan sadarwa, zaka iya sarrafa duk kwamfutar dake akan network din. Zaka iya tura bayanai zuwa wata kwamfutar kai tsaye, sannan ta cikin kwamfutarka zaka iya duba bayanan dake computer wani, zaka iya daukar bayanan duk ba tare da kaje inda kwamfutar take ba, kadan daga cikin misalin peer to peer shine Bluetooth. Domin fahimtar yadda peer to peer yake akwai bukatar kasan abinda ke faruwa idan ka turawa wani sako ba tare da amfani da sigar sadarwa ta Peer to Peer ba.

Shin ka taba shiga wata website din ka dauko hoto ko waka? Shin ka taba turawa wani sakon email ko sakon SMS ta wayarka? Shin kasan hanyar da sakon ke isa izuwa wanda ka tura? Dukkanin wadannan na faruwa ne ta sigar sadarwar da ake kira da Client- Server.

Domin fahimtar ma'anar Client-Server akwai bukatar mu yi bayani akan ma'anonin kalmomi biyu, watau 'client' da server.
Client: Na nufin mutum ko computer wadda take neman bayanai daga server. Client zai iya kasance mai tura sako ko mai karbar sako.
Server: Na nufin mutum ko na'ura dake mika bayanai idan an nema. A takaice server na nufin mai kai sako.

Client Server: Hanyace da kwamfutoci ke tura sako ta hanyar bawa dan aike (server) domin ya isar da sakon. Yayin da ka tura sako zuwa lambar wani, to kamar ka nemi ka bawa server aiken sakon ne, domin sakon naka yana zuwa ne cikin server ya tsaya, server din itace zata tura sakon ga wanda ka bukata. Misali, Jamilu ya rubuta wasika da niyyar turawa Musa, a bayan wasikar ya rubuta sunan Musa da adreshin shi. Bayan ya gama rubuta wasikar sai yaje offishin tura sako ya saka wasikar a akwatin sako (mailbox). Sai ma'aikatan offishin suka dauki wasikar suka kaiwa Musa a adreshin shi dake rubuce a wasikar. A wannan yanayi, kai da ka rubuta wasikar kaine "client", akwatin da ka aje wasikar shine "database", ma'aikacin da ya kai sakon shine "server". Kamar haka, yayin da ka turawa wani sako ta lambar wayarsa, sakon na isa Database na kamfanin layinka sai server ta tura sakon, lambar wayar da ka bayar shine ke matsayi adreshin wanda zaka turawa sakon.



Peer to Peer a fasahar Blockchain.

An yi amfani da sigar sadarwa na P2P wajen gina fasahar Blockchain don ta bada dama ga bangarorin biyu su yi mu'amala cikin yanci ba tare da ikon gudanarwar na wata cibiya ba. Wannan sigar sadarwar na peer to peer ya jima tun kafin samuwar blockchain, hakan ne ya bada damar gina Blockchain akan tsarin decentralization. Kasancewar Blockchain an samar da shine don warware kalubalen da ake fuskanta a ɓangaren mu'amala tsakanin ɓangarori, cikin abubuwa da suka haifar da qalubalen akwai tsarin Centralization. Tunda tsarin Centralization nada wasu kalubale da ake son magancewa ashe dole ayi amfani da wani tsarin daban, shi yasa aka yi amfani da tsarin Decentralization wanda kamar kishiyar centralization ne. Domin samar da wannan tsarin dole ayi amfani da sigar sadarwar da bata bukatar gudana a karkashin ikon centralization. To wacce sigar sadarwa za'ayi amfani da ita kenan da bata a tsarin centralization? Wannan sigar ita ce "Peer to peer networ".

ABIN LURA

Domin yin mu'amalolin kudade kana bukatar banki ko wata cibiya mai kula da mu'amalolin kudi. A banki ma'aikatanne ke gudanar da ayyukan tantance mu'amaloli da sauransu. Munyi bayanin yadda fasahar Cryptography ta maye amfanin ma'aikatan banki inda muka ce saura

kuma musan me zai zama madadin bankunan. Peer to Peer network shine fasahar da zai maye madadin bankuna. Bankuna sune mutum na uku dake tsakiyar mai turawa da wanda ake turawa kudi. A fasahar peer to peer kuwa domin tura bayanan ko kudade baka bukatar mutum na uku da zai kai kudin. Amma abin tambayar anan shine; ya za'ayi a dinga aje bayanan mu'amalolin da aka yi kenan? Misali tunda zan iya tura maka kudi batare da amfani da banki ba tunda ga peer to peer network. To idan na tura maka waye zai aje bayanan mu'amalolin da muke yi a matsayin hujjaj idan mun nema. Domin samun amsoshin wadannan tambayoyi bari mu tsallaka fasaha ta gaba wadda zata warware mana wannan matsalar.

3. Leader

Ledger wane kundi ne dake dauke da bayanan asusuna da bayanin mu'amalolin da suka gudana a cikin asusun. A bankuna, ledger kundi ne da ake rubuta bayanan mu'amalolin da kowanne mai asusu ya yi. Wannan mu'amalolin sun shafi rubuta kudin da ka aje, kudin da aka tura maka, da ranakun da aka gudanar da mu'amalolin.

Ana amfani da Ledger ne a fannin ilimin kasuwanci (bussiness) ko ilimin lissafin kudi (Accounting). A wajen gudanar da mu'amalolin kasuwanci akwai bukatar ware lissafin nau'ikan kudade, kana bukatar samar a asusuna domin saka kowanne kudi a bangaren da ya dace. Ware lissafin kudaden da gudanar da lissafin zai kasance ne a littafi, wanda wannan littafin shi ake kira da "Ledger"

Classification of ledger.
Wannan yana nufi Rabe-raben ledger. Ledger ta kasu kashi biyu kamar haka.

1. Permanent ledger.
2. Temporary ledger.

Permanent ledger: wannan kundi ne da ake rubuta adadin kudin da aka fara mu'amala da su da bayanan mu'amalolin da aka dinga yi tun bayan farawa. Misali, idan ka fara kasuwanci, sai ka rubuta adadin kudin da ka fara kasuwancin dasu da adadin ribar da aka samu ko faduwa. A hausance idan ance permanent ledger ana nufin kundin aje lissafin dundundun. Misali kudin da aka fara kasuwanci da su ko shekara nawa za'a yi ba za'a taba daina la'akari da su ba. Kowanne sati ko kowanne wata ko kuma kowanne shekara za'a dinga duba karuwarsu ko kuma raguwar su.

Temporary ledger: kundi ne ta rubuta adadin mu'amalolin da ake yi, da ya shafi ciniki, kudaden da aka kashe, kudaden da suka shigo wanda galibinsu bayan an gama lissafin ana tantance riba da faduwa sai a rubuta a cikin permanent ledger. Temporary ledger a hausa ana nufin kundin aje lissafin mu'amala na dan lokaci. Misali cinikin da aka yi yau koda ka aje lissafin karshe dai ka yi amfani da shi wajen irga riba ko faduwa, yayin da ka gama lissafin idan ka ci riba to zaka rubuta adadin ribar a asusun riba. Hakan na nufin, lissafin cinikin yau da ka rubuta ya tashi aiki.

Wannan shine rabe-raben ledger. Tunda mun fahimci rabe-rabenta, bari kuma fahimci ire-irenta.

Types of Ledger
Wannan na nufin ire-iren kundin aje lissafin mu'amalolin kasuwanci. Gasu kamar haka:

1. Bought/Creditors Ledger
2. Sales Ledger/Debtors Ledger
3. General Ledger
4. Private Ledger

Bought/Creditors Ledger: Wannan wani bangare ne na aje kayan da kasawo ko aka kawo maka a matsayin bashi. Misali, yayin da kaje saro kaya sai aka baka kayan ba tare da ka bada kudi ba ko kuma ka bada kudin amma baka gama biya ba. Idan ka dawo gida zaka rubuta wajen wanda ka sawo kayan da sunayen kayan da kudaden da ka biya da wanda ya rage baka gama biya ba. A duk lokacin da ka biya wasu kudi

cikin kudaden kayan zaka rubuta sai ka lissafa nawa ya rage baka gama biya ba.

Sales Ledger/Debtors Ledger: Wannan kuma kundin ne na aje bayanan wadanda suka sayi kaya a wajenka ba tare da sun biya kudin kayan ba. A matsayinka na dan kasuwa akwai bukatar ka rubuta duk wadanda ka bawa bashin kaya, idan sun kawo maka kudi zaka rubuta har su gama biya.

General Ledger: Wannan kundin tattare lissafin da ya shafi gaba daya kasuwancin ne, duk abinda ka shigar da shi a sauran kundin zaka rubuta takaicen adadinsa a wannan littafin. Misali bayan ka rubuta da mutane daban daban suke binka da mutanen da kaima kake bi da adadin kudaden. Ko wanne kaya da ka karbo bashi ka ware masa lissafinsa sannan kowanne kaya da ka sayar bashi ka rubuta ka aje. A karshe zaka tattara lissafin gaba daya nawa ake binka sannan zaka tattara lissafin nawa kake bi. Bayan ka gama tattarawa zaka rubuta adadin da ake binka da adadin da kake bi kaima, inda zaka rubuta wannan shi ake kira da "General Ledger"

Private Ledger: Wannan bangare ne a cikin kundin tattara lissafin kudade da ake aje lissafin abin ya shafin adadin yawan jarin da dan kasuwa ya sanya a wannan kasuwanci, da adadin kudaden kayan da ake sayarwa a yanzu. A matsayinka na dan kasuwa akwai bukatar ka aje lissafin jarin da ka sanya a kasuwancin, da kuma lissafin kayan da kake sayarwa yanzu kimarsu ta kai nawa, sannan nawa ka aje a yanzu a kasa. Misali, kana da jarin N10,000 ka sawo kaya da su, zaka rubuta cewa kayan N10,000 ka sawo. Bayan ka gama tantance nawa zaka sayar da kowanne kaya zaka rubuta idan ka sayar da kayan nawa kudin zai kama. Bayan ka rubuta wannan zaka rubuta acikin kayan da ka sawo din nan cinikin nawa ka yi. Sanin cinikin nawa ka yi shi zai taimaka ka gane kayan nawa ne suka rage baka gama siyarwa ba.

Ledger a fasahar Blockchain.

Kasancewar an samar da fasahar Blockchain domin ta kawo sauyi mai ma'ana wajen bada damar yin mu'amaloli cikin aminci da gaskiya, to

akwai bukatar a dinga aje bayanan duk mu'amalolin da mutane suka yi. Sannan kasancewar an gina fasahar Blockchain ne da sigar sadarwa na Peer to Peer hakan na nufin babu wata cibiya dake aje bayanan dukkanin mu'amalolin da suka gudana a Blockchain. Misali, duk mu'amalolin da kayi a banki to bankin ne ke aje maka bayanan nawa ka aje, nawa ka tura, nawa aka turo maka, nawa ka aje da bayanan da suka shafi wadanda kuka yi mu'amala da su da lokacin da kuka yi mu'amalar. Sai dai a Blockchain babu cibiyar da zata aje naka wannan bayanan, wannan ne ya tilasta samar da wani samfurin aje bayanai daban da wanda aka saba.

ABIN LURA

Kowanne banki kuma kowacce cibiyar kudi suna amfani da Ledger wajen rubuta bayanan mu'amalolin da suka wakana a gun. Daya daga cikin dalilin samar da fasahar Blockchain shine don sauya tsarin mu'amalolin duniya ta kowanne fanni musamman fannin kasuwanci da mu'amalolin kudade. Fasahar ta zo da samfarin Ledger na musamman zata dinga rarrabawa, adanawa da sarrafa bayanai domin kula da lissafin kowanne rukuni cikin tsari. Za'a iya cewa fasahar Blockchain ta cika kenan ta kowanne fanni? A'a, akwai sauran abin tambaya. Bankuna suna tantance kowanne mai son bude asusu dasu domin su tabbatar bayanan da ya basu sahihan bayanai ne. Saboda haka duk wanda yazo bude asusun banki sai an bukaci katin dan shedarsa, adreshinsa da duk bayanin da za'a iya gane shi cikin sauki koda bukatar hakan ta ta so. Ba iya bankuna fasahar Blockchain take son chanjawa ba, fasahar an samar da ita ne domin ta kawo sauyi yadda ake gudanar kowanne fanni na rayuwarmu. To akwai matsala babba idan ya kasance babu tsarin tantance mutane domin akwai bata gari da yawa kamar masu fasakaurin kudade, yan damfara, masu kutse da yan ta'adda. Wajibi ne a samar da hanyar tantance bayanan identity na kowa. Shin an gina fasahar Blockchain da wannan? Amsar shine "eh" don haka ne ma zamu tsallaka muga wacce fasaha aka yi amfani da ita a duniyar blockchain da zata warware wannan matsalar. Ku biyo ni muyi cigaba da yin nitso cikin kogin bayanin dalla-dalla.

4. Consensus mechanisms

Ba abu mai sauki bane ya kasance mutanen dake zaune a gurare daban-daban za su iya gudanar da mu'amaloli musamman na kudade ba tare da akwai cibiya ko wata hukuma dake rubuta mu'amalolin da samar da hujjar da zata nuna mu'amalar da aka yi ba. A tsarin centralization duk mu'amalar da aka yi ta hanyar banki, banki ce ke aje sheda sannan ita ke tabbatarwa. Amma a tsarin decentralization mutane zasu gudanar da mu'amaloli ba tare da akwai cibiyar dake kula tare da tabbatar da kowacce mu'amala. Halin mutane kuma ya bambanta ba, akwai masu gaskiya akwai macuta. Zan iya tura maka kudi koda ya shiga kace baka gani ba dole na sake turawa tunda ka san babu wanda zai tabbatar da na tura maka. Ya kake tunanin rayuwa zata kasance babu shugabanci? Ma'ana kasa kamar Nigeria ya kansa babu shugabanni masu mulki da zasu dinga zartar da hukunci da kula da al'amuran yau da kullum. Hakan na nufin zamu yi rayuwa yanci saboda kowa shugaban kansa ne. Zaka iya gina gida wani yace gidansa ne idan ya fika karfi ya kwaci gidan tunda babu hukumar da zata yi alkalanci a tsakanin ku. Irin wannan tsari na zama ba tare da shugabanci ba shine tsarin da aka kirkiri Blockchain akai.

Blockchain tarin fasahohi ne da suke kunshe da mafita akan yadda duniya zata iya tabbata ba tare da akwai masu yin hukunci ba. A duniyar blockchain babu shugaba sannan babu wata hukuma ko cibiyoyi mai gudanarwa, duk wanda ke cikin duniyar mai yanci ne kuma a haka za'a dinga gudanar da al'amura batare da samun wata matsala ba.

Tab! Babbar magana, koda yake hakan mai yuyuwa ne idan kowa dake duniyar mai gaskiya ne da tsoron Allah. Amma idan ya kasance akwai wadanda zaka iya bawa kudi suce baka basu ba to akwai matsala babba. Ina ga batun tura sako, zaka iya bawa dan aike kudi daga Kano ya kai katsina, dan aiken ya ki kai kudin kuma yace ya kai, ko kuma ya rage yawan kudin. Kuma babu yadda zaka yi saboda babu hukuma mai hukunci. Domin a magance irin wannan matsalar sai aka dauki fasahar

consensus mechanism a cikin ilimin cryptography aka gina fasahar Blockchain da ita.

Menene consensus mechanism?

Domin fayyace abinda wannan ke nufi, akwai bukatar mu yi bayani akan ma'anar kowacce kalma, hakan ne zai ba mai karatu damar fahimta ilimin dalla-dalla.

Consensus: Na nufin cimma matsaya akan wata shawara ko yarjejeniya wadda zai kasance duk wanda aka yi yarjejeniyar da shi ya gamsu da abinda aka zartar.

Mechanisms: Na nufin tsarin da za'a bi don cimma yarjejeniya.

Bisa la'akari da ma'anonin kalmomi biyu, idan muka hade su domin sannin fassarar jimlar, zamu iya cewa Consensus mechanisms na nufin " tsarin cimma yarjejeniya"

Consensus mechanism: Hanyace ta tuntubar ra'ayin juna yayin yanke hukunci akan abinda ya kamata ayi don a cimma wani guduri da aka yi niyar aiwatarwa.

Consensus mechanism: Tsari ne da ake amfani dashi a cikin tsarin komputa matsayin hanyoyin cimma yarjejeniyar da ta dace kan ƙimar bayanai ta hanyar sadarwa tsakanin abubuwa da aka rarraba ko tsarin wakilai da yawa. Kasancewar Blockchain fasahace da take bawa mutane damar musayar bayanai, gudanar da mu'amalolin kudade, cinikayya a tsarin rarrabawa ma'ana tsarin da gudanarwarsa baya karkashin wata cibiya ko hukuma. Tunda mutane zasu gudanar da mu'amaloli ne alhalin kowa yana inda yake, wani yana Nigeria wani kuma yana wata kasar amma za su iya yin cinikayya har a tura kudi ba tare da amfani da banki ba. Hakan na iya zama abu mai hadari idan ya kasance babu wani tsari da zai bada damar tantancewa, tabbatarwa da gamsarwa yayin mu'amala.

Consensus mechanism tsari ne na tantancewa da tabbatawa gami da gamsarwa akan kowacce mu'amala da za'a yi. Misali kafin a sayi kayanka akwai bukatar asan kayan mai inganci ne? Kafin a tura maka kudi akwai bukatar samun tabbacin kudin sun shiga. Idan kudin da aka tura maka sun shiga akwai bukatar samar da hujjar da zata tabbatar kudin sun shiga.

Consensus mechanism hanyace dake samar da mafita game da matsalar da ka iya faruwa na rashin gaskiya, damfara, chanja bayanai, rashin cika alkawari yayi mu'amala. Koda mutanen da za su yi mu'amala macuta ne su duka to Consensus mechanism ta samar da tsarin da zasu yi mu'amalolin ba tare da wani ya cuci wani ba.

A baya mun yi bayani cewa, a duniyar blockchain babu wata cibiya ko hukuma mai yin shari'a tsakanin mutane ballantana idan an cuceka ka nemi hakkinka, sannan babu babu wata cibiya mai shiga tsakani mutane yayi mu'amala ballantana su zama shedu akan kowacce mu'amala. Maimakon cibiyar da zata dinga tantance mu'amaloli kamar banki ita Blockchain samar da hanyoyin da za'a tantance inganci bayanai tayi.

Maimakon alkalai da suke hukunci tsakanin mai gaskiya da mara gaskiya, Blockchain samar da hanyar da zata hana yin zamba ko cuta tayi. Idan har akwai hanyoyin da zasu hana a cuce ka ko ka yi cuta to maye amfanin alkali kenan? Amfanin alkalai shine sasanta tsakanin mutate da yanke hukunci. Idan ya kasance mutane zasu yi komai nasu ba cuta babu cutarwa maye amfanin alkalai? Idan babu wanda zai kai kara a kotu maye amfanin alkalai?

A duniyar blockchain babu barayi domin an samar da hanyar da zata hana yin sata. Babu marasa gaskiya domin an samar da hanyar da komai kayi ana aje hujja. Babu masu chanja bayanai domin an samar da hanyar da bayanan ba zasu chanju ba. Bankuna suna rubuta duk mu'amalolin da aka yi ta hanyar banki domin ta zama hujja da sheda koda wani zai ce ba'a tura masa kudi ba. A blockchain kuwa kowacce mu'amalar da aka yi gaba daya mutanen dake wannan duniyar sai sun sheda, kaga kuwa babu halin a tura maka kudi kace ba'a tura maka ba.

Misali, kana zaune a Amerika ina zaune a nan Nigeria, sai na tura maka kudi, zaka iya cewa ban tura maka ba koda kuma na tura maka din. Saboda zaka yi gadara ai ba ta banki na tura maka ballantana banki su tabbata da kudin sun shiga. A blockchain kudin da na turama din nan kamar na tura maka akan idon kowanne mutum dake fadin duniya ne. Idan kudin da na tura maka sun shiga to za'a rarrabawa mutane dake duniyar blockchain shedar na tura maka kudi. Kaga kuwa tunda kowa ya gani ai babu halin ka karyata sannan nima babu halin ban tura maka ba nace na tura maka.

Idan gari ya waye rana ta fito to kowa zai iya kallon hasken ranar nan. Kamar haka duk mu'amalolar da aka yi a blockchain kowa zai iya zama shedar an yi.

A takaice consensus mechanism tsari ne na cimmawa kowacce yarjejeniya. Mai yasa aka ce yarjejeniya alhalin kila wani zai yi tunanin cinikayya bata bukatar sai anyi yarjejeniya?
Maganar gaskiya kowanne abu da zaka gudanar yarjejeniya ce. A hausa idan ance yarjejeniya ana nufin yarda ta hadu da yarda su narke a cikin yardar, ma'ana idan ka yarda nima na yarda hakan ake kira da yarjejeniya.

Kowacce mu'amala imma ta kasuwanci, zamantake da sauransu duk sai yarda ta shiga tsakani sannan a aiwatar da mu'amalar. Da baka yarda da banki ba da ba zaka kai kudinka ba, haka suma idan basu yarda da kai ba baza su bude maka asusu ba. Tsakanin mai sayarwa da mai saye dole sai yarda ta shiga tsakanin su kafin su gudanar da cinikayya. Misali, zan sayi kaya a wajenka sai ka fadamin farashin kayan, sai fa idan na yarda ne sannan zan biya kudin na karbi kayan, sannan kaima sai idan ka yarda ne sannan ka amince da kudin da na sayi kayan. Amma kafin a samu yarda dole sai an samu tantancewa da tabbatarwa. Misali, idan na saye kayanka kafin ka amince da farashin da na sayi kayan sai idan ka yi nazari wanda na zarin tantancewa ne. Idan na tura maka kudin dole sai idan kudin sun shiga asusunka kafin kayarda na tura maka. Domin ka yarda na tura maka kudi dole a samar da hanyar da kudin zai shiga batare da gargada ba.

Consensus mechanism hanyace ta tabbatar da duk mu'amalolin da aka yi domin su gudana kamar yadda aka yi yarjejeniyar aiwatarwa. Idan ni da kai munyi yarjejeniya na baka kwangila, to akwai bukatar ka aiwatar da kwangilar ni kuma na tabbatar. Don haka, yarjejeniyar kwangilar da muka yi ta hanyar amfani da tsarin consensus za'a tabbatar da an aiwatar da kwangilar kamar yadda aka yi ta. Consensus mechanism hanyace da za'a iya amfani da ita don ganin cewa abinda aka yi niyyar yi ya kammala batare da matsala ba. Misali, kasuwancin da zamu yi, consensus mechanism tsari ne da za'a bi don ayi wannan kasuwancin kamar yadda aka yi yarjejeniyar aiwatarwa.

Consensus mechanism hanyace da zata tabbatar da cewa kowacce yarjejeniya ko mu'amalar da aka yi kudirin yin an aiwatar da ita yadda ya kamata.

ABIN LURA

An yi amfani da consensus mechanism domin su wakilci gwamnati, jami'an tsaro da alkalai a duniyar blockchain. Amfani gwamnati shine ta mulki mutane ta dinga basu dokoki da tsare-tsare wanda za su tafi a kansu. Daya daga cikin amfani Consensus mechanism shine su zama ladubban da za'a iya amfani da wajen cimma kudirin da aka yi niyyar aiwatarwa. Aikin jami'an tsaro tabbatar da tsaro da hukunta masu laifi. Daya daga cikin amfani Consensus mechanism shine dakile duk wata hanyar yin cuta ko makamantan haka a duniyar blockchain. Amafanin alkali shine yin shari'a tare da yanke hukunci a tsakanin mutane ta hanyar tabbatarwa da tacewa. Daya daga cikin amfani concensus mechanism shine yanke hukunci akan abubuwan da aka yi yarjejeniyarsu ta hanyar tattancewa da tabbatarwa. Ya kamata mu yi nitso sosai a cikin bayanin consensus mechanism kamar yadda muka fitar da bayanin sauran dalla-dalla. Abinda yasa zan tsayar da bayanan haka shine; domin yawancin hanyoyin da ake amfani dasu a consensus mechanism Blockchain ce ta samar da su. Da yake yanzu bayani muke akan fasahohin da aka yi amfani da su wajen gina Blockchain to bai kamata mu sanya bayanin abubuwan da sai Blockchain ta zo aka same su. Irin wadannan abubuwan zamu yi bayanin su a gaba kadan.

FEATURES OF BLOCKCHAIN TECHNOLOGY

A baya mun yi bayani ne akan ilimomi daban-daban da fasahohi daban daban da aka gina fasahar Blockchain dasu. Wannan kuma bayani ne akan tsaruka da fasahohi da Blockchain ta samar bayan an gina ta. Duk abinda ka gani a duniya, bayan an samar da shi dole akwai abinda shima yake samarwa.

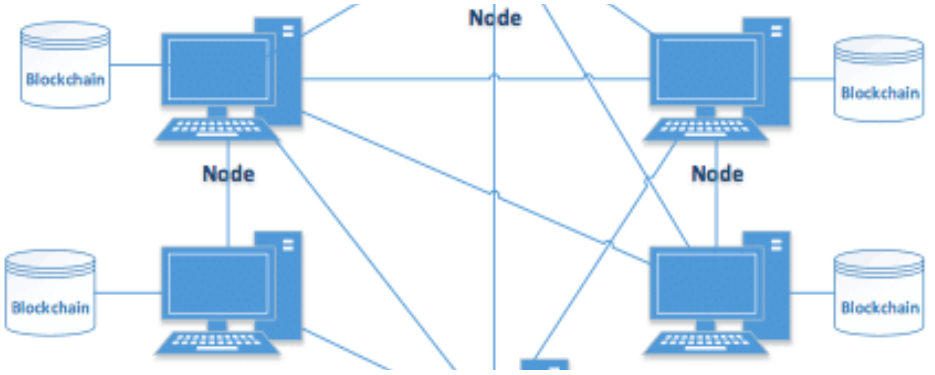
Decentralization

Decentralization a fasahar Blockchain na nufin karbe ikon dake hannun cibiyoyi da hukumomi akan mu'amalolin mutane. Kowacce mu'amala da ake gudanarwa imma ta kudi, ta kasuwanci da sauransu duka suna gudana ne a karkashin wata cibiya ko wata hukuma wato centralization. Tsarin centralization tsari ne dake nufin kowacce mu'amala zata wakana ne karkashin ikon wani ko wata cibiya. Idan zaka tura kudi ko aje kudi dole ya zama ka yi amfani da banki. Bankuna suke aje kudaden al'ummah sannan suke gudanar da kudaden sannan suke yanke shawara abin da za'a yi. Maimakon mika ragamar gudanarwa a hannun tsirarun mutane, decentralization tsari ne da e nufin ikon gudanarwar yana hannun kowanne mutum dake cikin duniyar blockchain.

A duk lokacin da za'a samar da wata fasaha ta zamani abubuwa uku ake fara dubawa, watau imma abinda za'a samar in nan ya kasance a tsarin centralization ne ko decentralization. Abinda aka samar da shi akan tsari irin na centralization hakan na nufin dole wata ma'aikata, wata cibiya ko wata hukuma ce zata kula da ikon gudanarwar abin. Daga cikin misalin abubuwan da aka samar da su akan wannan tsari na centralization akwai bankuna, Google, Facebook. Mai yasa aka ce bankuna suna kan tsarin Centralization? Saboda sune ke ajiye kudi na da kudinka da sauran kudaden al'ummah. Kudaden mu duk tattarawa muke mukai banki ta aje mana, idan ina son na tura maka kudi dole ta bankin zan tura maka. Mai yasa nace Google na kan tsarin centralization ne? Saboda yayin da na shiga Google na nemi wani bayani to na tura bukatar ne izuwa rumbun aje bayanai na Google. Hakan na nufin bayanan suna aje ne a rumbun

ajiya (database) na Google. Idan kuwa ya kasance wata cibiya ce zata adana bayanai ita kadai to cibiyar na tsarin Centralization. Mai yasa nace Facebook na kan tsarin Centralization ne? Saboda yayin da ka shiga Facebook ka tura sako to sakon na zuwa ne rumbun ajiya na Facebook daga nan ne sai a tura sakon zuwa wanda na turawa.

Abinda kuwa aka samar da shi akan tsarin decentralization yana nufin ikon gudanarwarsa yana hannun mutane da yawa na sassa daban-daban. Saboda haka, fasahar Blockchain tana kan wannan tsari na decentralization. Maimakon adana bayanai duk mu'amalolin da muke yi a rumbun ajiyar bayanai na wata cibiya, a fasahar Blockchain bayanan mu'amaloli ana rarraba sune zuwa komputar ko wayar kowa. Ni da kai da kowa dake cikin duniyar blockchain yana aje bayanai duk mu'amalolin da aka yi.



Decentralization a fasahar Blockchain ba iya tsarin aiwatarwa bane kawai, a'a akidar Blockchain kenan. Idan ance akida ana nufin abinda za'a tafi akai. Babban makasudin samar da fasahar Blockchain shine domin a kawar da tsarin yarda da wata cibiya ko hukuma da mutane suke yi. Don haka, mu'amalolin da ake aiwatarwa a blockchain ana aiwatar da su ne batare da yarda ba. A duniyar blockchain idan zan tura maka kudi to zan tura maka ne kai tsaye ni da kai ba tare da bukatar banki ba.

Toh, Ko mai yasa aka samar da fasahar Blockchain a tsarin decentralization? Shin akwai wani fifikon amfani ne? Bari dai mu ji fa'idar da tasa Blockchain ya zabi kasance akan decentralization.

Benefite of decentralization

Wannan yana nufin amfani ko fa'idar dake cikin tsarin decentralization. Ga su kamar haka:

Provide trustless Environments

A tsarin sadarwa na Blockchain babu wanda yasan wani ballantana maganar yarda ta shigo cikin. Za mu yi mu'amala daga ni sai kai kilama ban sanka ba ka ga kuwa babu batun na yarda da kai. Kowanne mamba dake cikin kafar Blockchain yana da copy na bayanan mu'amalolin da suka wakana gaba daya a wannan dandamalin. Hakan na nufin babu mai ikon janya wani abu na bayanai mu'amalar da muka yi. Hatta mu'amalar da muka yi tsakanina dakai to tana rubuce a ledger dake gun kowa. Koda wani yayi kokarin chanjawa to ya yi aikin banza.

Improves Data reconciliation

Galibin kamfanoni ko cibiyoyin suna musayar bayanai da abokan ayyukansu. Kamar yadda kowane banki a Nigeria yana musayar bayanai da Central Bank. Wasu bayanan ana ake su a rumbun adana bayanai ne na Central Bank. Domin wani banki ya duba bayanan idan bukatar haka ta taso dole sai ya yi amfani da data da yawa. Misali, BVN na kowane mai asusu a bankuna bayanan BVN din yana aje ne a rumbun ajiyar Central Bank. Saboda haka, duk lokacin da za'ayi wata mu'amala da ta shafi duba bayanan BVN din mutum to dole banki ta nemi bayanan wajen Central Bank wanda hakan zai haifar da jinkiri da barna data da yawa. Amma a tsari na decentralization bayanan kowa yana kunshe a cikin Ledger kuma kowanne mamba nada kofi na ledger din. Don haka ba'a bukatar neman bayani a wajen wata cibiya daban, sannan duk bayanin da aka nema cikin hanzari za'a samu.

Reduces Points Of Weaknesses

Wannan na nufin rage gazawar tsarin Centralization. Kasancewar wata cibiya ke da ikon aje bayanai, ya zai kasance idan kayan aikin cibiyar ya samu matsala? Kenan zai shafi al'ummah kenan? Bama iya nan ba, saboda wata cibiya nada cikakken ikon gudanarwar akan mu'amalolin al'ummah hakan baraza ce ga haɗarin faruwar cin hanci. Sannan idan cibiyar ta samar da wani tsari mara kyau to zai shafi al'ummah gaba daya dake gudanar da mu'amalolinsu a karkashin cibiyar. Amma a tsarin decentralization an rarraba bayanai ga duk mambobin dake fasahar Blockchain, don haka lalacewa komputa ta ba zai shafe kowa ba. Sannan babu mai ikon zartar da wani hukunci ballantana ya samu damar cin hanci ko zamma.

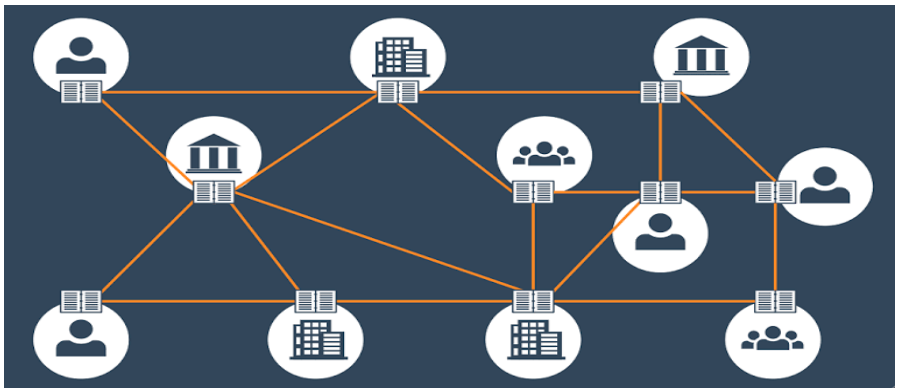
ABIN LURA

Yayin bayani akan fasahohin da aka yi amfani da su aka giba fasahar Blockchain, mun yi bayani akan peer to peer. Muka ce peer to peer sadarwace dake sadar da mutum da mutum, computer da computer suyi musayar bayanai kai tsaye ba tare da akwai wani abu mai ikon gudanarwar a tsakiyar su. Domin cika alkawarin Blockchain na wanzuwa akan tsarin decentralization, an yi amfani da samfurin sadarwar na peer to peer wajen dora Blockchain akan turbar da za'a gudanar da mu'amaloli kai tsaye ba tare da wani ko wata cibiya na kula da mu'amalolin ba.

Distributed ledger

Distributed ledger rumbun ajiya bayanai ne kamar database wanda aka rarraba a tsakanin kwamfutoci ko mutane dake cikin wannan zaure (node) . Kowacce database akwai ma'aikatan cibiyar dake kula da ita, suke da ikon aje bayanai, gogewa da kuma chanjawa. Amma distributed ledger gaba daya mutane dake kan Blockchain ne ke kula da ita domin bayanan dake cikinta an rarrabawa mutane bayanan.

A baya mun yi bayani akan ledger, muka ce kundi ne da ake aje bayanai na duk wata mu'amala da ta wakana. Mu kace hatta bankuna suna aje bayanai ne a ledger. Duk kudin da ake aje sai an rubuta shi a ledger, duk kudin da aka cire sai an rubuta shi a ledger ta wannan bankin. Kenan banki ne ke aje bayanai da tantance su wanda hakan ya sha bamban da distributed ledger da bayanan dake cikin ta suna hannun kowa.



Babban makasudin distributed ledger shine domin a kawar da matsalar aje bayanai a guri daya wanda hakan na iya haifar da matsaloli da dama. Daga cikin matsalolin akwai kashe kudi domin kula da tsaron ta. Sannan kasancewar akwai masu ikon shigar da bayanai ko gogewa a cikin ledge, to hakan na iya zama abu mai hadari musamman idan wanda suke saka bayanan marasa gaskiya ne.

Distributed ledger duk mu'amalar da aka yi bayanin da ya shafi mu'amala yana kunshe a cikin block, yayin da bayani ya shiga block kuwa to babu mai ikon gogewa ko chanja wani abu daga bayanin. Duk kwarewarka ba zaka iya chanja bayanai ko goge su a distributed ledger domin irin bayanan ana rarraba sune tsakanin kwamfutoci dake fadin duniya matukar mai kwamfuta ya shiga farfajiyar Blockchain. Hakan na nufin domin ka chanja bayanan cikinta kana bukatar tattaro kowacce computer dake kan wannan tsarin sannan ka goge bayanai dake cikin kowacce.

ABIN LURA

Yayin da muke bayani akan fasahohin da aka yi amfani da su wajen gina Blockchain mun ambaci ledger harma muka yi bayani akanta dalla-dalla. Distributed ledger samfuri ne na irrin waccen ledger din da muka ambata. Komai na Blockchain yana tafiya ne a kan tsarin decentralization shi yasa maimakon ayi amfani da irin waccen Ledger din sai aka samar da wata wadda bayanan cikinta ana rarraba su ne tsakanin kowa.

Immutablity

Domin fahimtar wannan akwai bukatar mu yi bayani akan ma'anar kalmar a turanci da kuma yadda aikinta yake a fasahar Blockchain.

Immutable: nufin "abin da baya chanjawa tsawon lokaci ko abin ba'a iya chanja shi"

Immutable a blockchain tsari ne na hana goge bayanan ma'amalar da ke kunshe a cikin block. Immutablity yana bawa mutane tabbacin cewa kudaden su da suka ajiye ba za'a iya satar su ba, sannan bayanan mu'amalolin su zasu kasance a yadda aka gudanar da su batare da wani ya samu ikon chanja komai a ciki ba. Kamar yadda muke bawa bankuna yardar mu cewa mun yarda zasu adana kudaden mu da bayanan mu ba zasu chanja su ba. Sai dai a Blockchain babu bukatar ka yarda da kowa domin babu kowa dake kula da kudaden ka.

Da zarar aka gudanar da mu'amaloli bayanan mu'amalolin na kunshe ne a cikin block sannan duk bayanan da suka shiga cikin block babu mai ikon iya chanjasu. Kasancewar Blockchain bashi da wata rumbun ake bayanai dake a wata cibiya, duk mu'amalolin da aka yi bayanan su na rarrabuwa ne tsakanin kwamfutocin dake kan sadarwar Blockchain. Domin ka samu nasarar goge bayanai kuwa to kana bukatar goge bayanan dake cikin kowanne block wanda blocks kuma a warwatse suke a cikin kwamfutocin kowa.

Tamper-Proof

Domin fahimtar wannan cikin sauki, bari mu bada ma'anar kalmar a fannin harshe da kuma ma'anarta a duniyar fasahar Blockchain.

Tamper-Proof kalmomi ne guda biyu aka hada su domin bada cikakkiyar ma'ana.
Tamper: Na nufin kokarin chanja wani abu daga yadda yake domin lalata abin, ko rage masa karfi, domin boye hakikanin gaskiyar wani abu ko domin chanja sigar abin.
Proof: Na nufin bada hujja ko sheda domin bayyana gaskiyar al'amari.

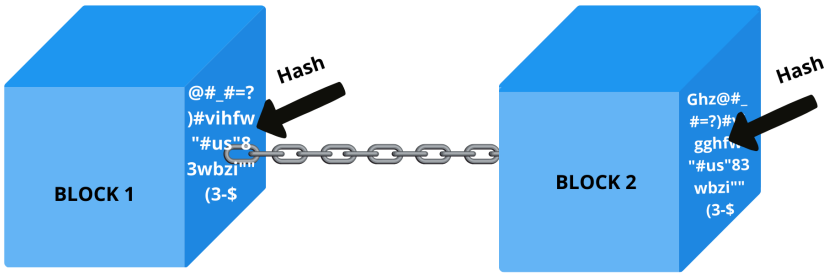
Idan muka kalli ma'anonin kalmomin guda biyu zamu iya fahimtar Kalmar "Tamper" a takaice na nufin chanja bayanai, yayin da da kalmar 'Proof' ke nufin samar da hujja akan bayanai. Cikin sauki, zamu iya fahimtar kalmomin guda biyu kamar cuta da magani ne, 'Tamper' ita ne cutar domin tana nufin kokarin chanja bayani, yayin da 'Proof' itane maganin domin tana nufin samar da hujjar da zata nuna gaskiyar bayanin da aka chanja.

Tamper-Proof: Tsari ne gane duk wani yunkuri da aka yi domin chanja bayanai a blockchain. Bayan an gina fasahar da tsarin da ake da tabbacin ba za'a iya chanja bayanai amma hakan bai wadatar ba sai da aka samar da wannan tsarin da za'a gane duk wani yunkuri na chanja

baya nai. To taya za'ayi gane wani yayi yunkurin chanja bayani? Ta hanyar block da hash.

Hash kamar abinda ake amfani da shi don cike gurbin dake tsakanin bulo da bulo lokacin da ake gini. Idan mai gini ya dora bulo a tsakanin bulo din da wani bulo da zai dora yana sanya kasa ko kwababben siminta ya zuba a tsakiyar bulo din (block bonding) da hausa ana kiransa "cokin"

Kwatankwacin haka, kowanne block a blockchain gaban block din akwai hash. A baya munyi bayanin yadda hash function yake, mukace hanyace da ake dunkule bayanan daga sigar rubutun da suke zuwa sigar wasu lambobi mai su rikitarwa. Duk mu'amalolin da aka yi ana aje bayanan su cikin block a rufe, wadannan bayanan sai a maida su hash sai a rubuta hash din a gaban block din.



Block na biyu a cikin sa hash na block na daya yake, hakan na nufin kowanne block yana dauke da hash din na bayansa. Koda ka goge abinda ke cikin block din farko to block na biyu na dauke da bayanan dake ciikin na farkon da ka goge.

Yadda za'a gane wani ya goge bayanai shine za'a ga babu block din da bayanan ke cikinsa. Ko a cikin katangarka idan aka cire block daya zaka gane domin zaka ga huda a tsakiya.

TYPES OF BLOCKCHAIN

Wannan na nufin Rabe-raben blockchain da muke da su. Gasu kamar haka:

Public Blockchain

Wannan nau'i ne na blockchain wanda yake a bude, ma'ana an samar da shi domin kowa. Kowa na iya shiga ciki batare da an gayyace ba, kowa nada damar gudanar da mu'amaloli cikin ba tare da an kebe wasu mutane na daban ba. Duk inda kake a fadin duniya zaka iya yin mu'amala a ciki batare da la'akari da addininka, iliminka, jinsinka ko kalar fatar jikinka ba.

Public blockchain kamar duniya ne wadda kowa ya shigo yana da damar rayuwa a cikinta. Kowa dana yanci daidai da kowa babu wanda yafi wani yanci a public block. Sannan gaba dayansa yana kan tsarin

decentralization ne ta yadda babu wasu zababbu ko cibiyoyi dake kula da shi.

Private blockchain

Wannan nau'i ne na blockchain mai zaman kansa, wanda iya mutanen da aka kebe ne kadai za su iya gudanar da mu'amaloli a cikinsa. Mutanen da aka gayyata ne kadai suke da ikon shiga, sannan duk mu'amalolin da ake yi cikinsa masu zaman kansu ne wadanda aka yarda su yi su kadai ke da ikon yi.

Consortium blockchain

Wannan nau'in blockchain ne na hadin gwiwa inda ma'aikatu ko masana'antu zasu hadu a cikinsa. Kowanne bangare na da ikon gudanarwar da ayyukan shi a gefe daban da sauran, duk da yake na hadin gwiwa ne amma kowa bangarensa daban ne. Babu mai ikon shigowa bangaren wata hukuma da ba ta shi ba sai idan a tsakanin hukumomi ko cibiyoyin sun yarda da yi musayar bayanai a tsakaninsu.

Galibi gwamnati ko cibiyoyin kudi suke amfani da wannan nau'in na blockchain. Central Bank da sauran bankuna suna iya kasancewa a cikinsa domin musayar bayanai a tsakaninsu.

Hybrid blockchain

Wannan nau'i ne na blockchain wanda za'a iya ce masa shakundum, domin ya kunshi public blockchain da private blockchain. A cikinsa ana iya sirrinta bayanan da ake son sirrintawa kuma ana iya bayyana bayanan da ake son bayyanawa. Wannan yana bawa yan kasuwa gagarumar dama don zaɓar bayanan da suke son su bayyana a bayyane da kuma irin bayanan da suke so su ke son sirrintawa.

APPLICATION OF BLOCKCHAIN

Duk da yake Bitcoin da sauran cryptocurrencies sune Aikace-aikacen Blockchain da suka shahara amma akwai gurare da yawa da fasahar Blockchain take taka muhimmiyar rawa. Tasirin fasahar Blockchain ba a iya cryptocurrencies ya tsaya ba, ya mamaye kamfanoni, masana'antu da ma'aikatu inda ya samar da gagarumin chanji da cigaba na hakika. Bari mu yi bayanin yadda tasirin fasahar Blockchain zai iya taimakawa a fannononi daban-daban.

Smart Contract

Kamar yadda muka saba, domin fahimtar abinda smart contract ke nufi dalla-dalla akwai bukatar mu yi fashin bakin kalmomin guda biyu.

Smart: Na nufin tsara abu cikin hikima, dabara ko nuna kaifin hankali yayin aiwatar da wani abu.

Contract: Na nufin yarjejeniya tsakanin bangarori biyu ko fiye, bisa alkawarin aiwatar da wani aiki cikin ka'idadden lokaci akan wani adadin kudi. Wannan yarjejeniya tana iya kasancewa a rubuce ko a cikin sigar magana. A wajen gudanar da wannan yarjejeniya wajibi duka bangarorin su aminta da sharadodin Yarjejeniyar da ayyukan da aka tsara za'ayi. A takaice a hausance idan ance contract ana nufin "kwangila"

Bisa ma'anoni kalmomin biyu zamu iya bada cikakkiyar ma'ana da zata dace da wadanda kalmomi, saboda haka smart contract na nufin "tsararriyar kwangila", a hausa idan aka ce da abu 'tsararre' ana nufin abinda aka yi amfani da hikima ko kwarewa wajen samar da shi.

Bayan ma'ana ta gundarin kalmomi, bari mu yi bayanin ma'anar Smart Contract a fasahar Blockchain.

Smart Contract: kwangila ce wadda aka bawa computer umurnin aiwatar da sakamakon yarjejeniyar da aka tsara kwangilar akai. A gargajiyance kamar yadda muka san kwangila ana gudanar da ita ne tsakanin bangarori biyu ko fiye bisa alkawarin aiwatar da wani aiki. Aikin zai iya kasancewa da musayar kayayyaki ne ko kuma na aiwatar da wani aiki ne. Galibi bangarorin biyu sukan rubuta yarjejeniya kowannensu ya sanya hannu tabbacin ya yarda da sharadodin da aka gindaya.

Idan ya kasance lokacin da aka ka'idaddence za'a kammala kwangilar yayi amma wanda aka bawa kwangilar bai gama aikin ba ko kuma bayi aikin yadda aka yi yarjejeniya ba, mai zai faru kenan?
Galibin manyan kwangiloli yayin aiwatar dasu ana kiran lauya ya samar da doka a tsakanin bangarorin biyu, duk wanda ya kasa cika alkawari dokar zata yi aiki a kansa. Duk da yake an sanya doka amma kafin a gama sasantawa za'a iya daukar lokaci mai tsayi sannan za'a bi matakai da yawa wanda zasu iya gajiyarwa.

A Smart Contract, computer ce take zama a matsayin mai shari'a a tsakanin bangarorin biyu, ita zata yanke hukunci nan take da zarar kwangilar ta kammala. Misali idan na baka aiki nace zan baka kudi idan ka gama aikin, da zarar ka gama aikin zaka zo wajena na baka kudin. Amma a tsarin Smart Contract, zan fadawa computer cewa na baka kwangilar aiki, idan ka gama aikin ta ciri kudi a asusuna ta baka. Da zarar ka gama aikin kamar yadda muka yi yarjejeniya, nan take computer zata cire kudin ta baka.

Kyakkyawan misali domin fahimtar yadda Smart Contract take, kaddara kana da gida sai ka bawa wasu hayar gidan, smart contract na dauke da bayanan sunannakin ku, adreshinku, lambobin ayarku, lambar asusun bankunanku, ranar da ka basu hayar, ranar da zasu baka kudi, da zarar ranar da zasu baka kudi ta yi sai computer ta cire kudin asusunsu ta tura a asusunka. Smart Contract ta magance matsalar jinkirin biyan kudi ga wanda ka bawa haya, ta magance zuwa karbar kudi lokacin karbar kudi bai yi ba sannan ta magance zuwa kotu in shari'a idan masu haya basu biya kudi ba.

A takaice, Smart Contract wani yanki ne na software wanda ya ƙunshi dokoki da ka'idoji don sasanta yarjejeniyar kwangila. Yana tabbatar da kwangilar kai tsaye sai ya aiwatar da abubuwan da aka ayi yarjejeniya akan su. Smart Contract wasu tsararrun lambobi ne wanda suke dauke da yarjejeniyar kwangila tsakanin bangarori tare da umurnin aiwatar da alkawarin da aka yi na aiwatar da sakamako idan kwangilar ta kammala. Bayanan da lauya zai rubuta na doka da sharadodi tsakanin bangarori biyu maimakon rubuta su a takardar wannan bayanin ana juya su a matsayin lambobi akan a tashar Blockchain, da zarar an cika sharuɗɗan kwangila sai Blockchain ya aiwatar da sakamako.

Yadda Smart contract ke aiki.

Domin fahimtar yadda Smart Contract ke aiki bari mu dauki misalin kana son sayar da kadararka. Tsarin sayar da kaddarorin yana buƙatar takardu da yawa tare da hadin gwiwar ɓangarorin da yawa. A yanzu mafi yawan mutane idan za su sayar da gidajensu ko filaye suna sayarwa ne ta hanyar dillalai. Dillalan suke da alhakin tattara takardu da nemo masu saye. Suna aiki a matsayin masu shiga tsakanin mai saye da mai sayarwa sannan suna taka muhimmiyar rawa wajen sasanta cinikin. A wannan yanayin, ba zaka iya sayar da kadararka kai tsaye daga kai sai mai saye ba dole sai ka hada da dillalai da shedu, kuma dukkanin zasu bukaci ka biya su kudi, wannan na iya haifar da asara ga mai sayarwa.

Ta hanyar amfani sa smart contract, zai yi tasiri wajen saukake wahalar cinikayya da rage kashe kudade ga bangarorin. Smart Contract an tsara ta ne akan sharadi mai tushe (idan abu kaza ya kasance to abu kaza ya faru) wanda zai warware matsalar rike takardu da masu kaya suke yi ta hanyar tura takardun kadarar ga mai siye kai tsaye lokacin da ya gama biyan kudin, da sauran sharuɗɗa.

Mai kadar zai aje takardun ta a distributed ledger, haka shima mai sayen anan zai aje kudin, mai saye da mai sayarwar zasu iya duba kudaden da takardun a duk lokacin da suka bukata. Tunda kudin an sanya su a distributed ledger don haka sauran mutane dake kan ledger din zasu zama sheda, an kawar da kafar yin damfara. Bugu da kari, babu wata dama ga dillalai da yancin al'ada da zasu shiga tsakani kasancewar

yarjejeniyar cinikayya a tsakanin ɓangarorin ba a takardar aka yi ba ballantana a bukaci sa hannunsu. Dukkanin ayyukan da dillalan zasu yi, shedu zasu yi da wanda lauyoyi zasu yi an tsara su ta hanyar lambobin umurni na computer.

Mai yasa smart contract ke da matukar amfani?

Ta hanyar amfani da smart contract a harkokinmu na yau da kullum, za'a samu gagarumin chanji mai ma'ana duba da yadda tazo da tsarin dake saukake wahaloli a bangaren yadda muke gudanar da kwangiloli a gargajiyance. Smart Contract tsari ne mai sauri wajen gudanar da kwangiloli, dalili da yasa ya samu karbuwa kenan a wajen mutane. Smart Contract na samar da madaidaiciyar haɗakar tsaro dake da sauƙin gudanarwa yayin musayar kadarori ko kwangiloli. Bari mu duba fa'idodin da smart contract ke bayarwa:

Transparency.

Transparency na nufin aiwatar da aikin bayyananniyar sigar ba babu nuku-nuku a cikinta, ma'ana gaskiya da gaskiya.

Kamar yadda muka fada a baya, Smart Contract na cike da sharuɗɗa da matakai dalla-dalla waɗanda ɓangarorin da suka yi Yarjejeniyar zasu iya dubawa kai tsaye kuma a kowanne lokaci. Misali, kai da zaka sayar da kadara sai ka dora takarda, wanda zai sayi kadara sai ya dora kudi, idan ya gama biya nan take kadara da takardar za'a tura su ga mai saye. Hatta sharadodin cinikayyar an dora, a kowanne lokaci ɓangarorin biyu zasu iya bitar sharadodin kai tsaye. Hakan ya kawar da nuku-nuku wajen yin yarjejeniya. Bugu da kari takardu sukan iya bacewa a hannun wanda ya sayi kadara, a tsarin Smart Contract zai iya kara sauke takardar kadarar da ya saye a koda yaushe matukar bai sayar da kadarar ba.

Time-efficient.
Na nufin aiwatar abu cikin sauri ba tare da jinkiri ba

A wajen kokarin samar da takardun yarjejeniya a tsarin ɓangarori biyun, dole zai dauki lokaci mai sayi, hakan na faruwa ne saboda sai an bukaci

sanya hannun mutane da yawa sannan sai an bukaci gudanarwar dillalai da lauyoyi a wani juyin. A gefe guda, ana gudanar da smart contract ta hanyar amfani da Internet tunda ba komai bane face lambobin software.Sabili da haka, saurin kammala ma'amaloli ta hanyar lambobin software shine hanya mafi sauri.

Precision.
Na nufin samar da daidaito tsakanin bangarorin biyu, daidaiton yafi tabbatar da an kammala Yarjejeniyar kamar yadda aka tsara

Smart Contract an tsara shi a cikin takamaiman tsari. Yana jiran masu cinikayya su gama cika duk sharadodin da suka yi yarjejeniyar su nan take sai ya tura sakamako. Duk sharadin da ba'a gama cika shi yana haifar da rashin kammaluwar kwangilar. Yayin saita smart contract wajibi ne a sanya duk sharadodin a cikin siga.
A wannan yanayi, smart contract cike take da daidaito akan sharuɗɗan da aka tsara ta akai, da zarar ɓangarori biyu suka cimma yarjejeniyar sai a bawa mai kaya kudin kayan shi kuma mai saye a ba shi kayan batare da wani rikici ba.

Safety.
Na nufin amince wajen mu'amala.

Smart Contract na gudana ne a cikin tashar fasahar Blockchain, fasaha mai karfin amince da boye bayanai ta yadda zasu yi wahalar sata ko chanjawa. Tunda ta dace da mafi girman ƙa'idodi na aminci, matakin kariyar da ke ciki yana bawa smart contract dama zama mai cikakken aminci.

Data Storage

Na nufin aje bayanai.

Yayin amfani da smart contract baka bukatar adana takardun kwangiloli. Dukkanin takardun kadarori da bayanan yarjejeniyar da aka yi suna aje acikin ledger, ɓangarorin biyu suna iya dubawa ko turawa aduk lokacin

da suka bukaci haka. Saboda haka, smart contract tsari ne mai tasiri wajen adana bayanai.

Savings.
Wannan na nufin saukin kashe kudade.

A gargajiyance idan zaka sayar da kadararka, zaku rubuta sharadodin biyan kudin kadarar, zai iya kasancewa za'a biya kudin ne a lokacin daban daban. Duk lokacin da mai saye ya kawo kudi dole a kira dillalai, lauya da masu sheda su sheda an kawo kudin, suma zasu bukaci kasan su. Amma a tsarin Smart Contract, duk kudin da aka kawo kudin za'a dora shine kawai a distributed ledger, da zarar kudin suka kaga cika sai su shiga account din mai kadarorin. Hakanan ya rage kashe kudade wajen baiwa lauya, dillalai da masu sheda.

Paperless.
Na nufin rage amfani da takardu.

Kasancewar sharadodin smart contract ana rubuta sune a tsarin lambobi, wanda kuma lambobin suna dauke da dukkanin bayanan da suka shafi kwangilar. Wannan zai taimakawa kamfanoni wajen rage yawan amfani da takardu da suke yi wajen cinikayya da kwastomomin su.

Zaben Gwamnati

Duk kokarin da gwamnati ke yi wajen ganin ta samar da tsaro wajen zabe, amma hakan baya hana yin magudin zabe. Tsarin zabe da gwamnati ke amfani da shi yanzu tsarine na manual, duk matakan tsaron da gwamnati zata sanya ko dora amintattun mutane a matsayin shugabannin hukumar zabe, ba zai hana magudi ba domin bayanan masu kada kuri'a a fili suke, suna da saukin sata ko chanjawa. A irin wannan yanayi, hanya mafi inganci shine gwamnati ta yi amfani da tsarin Smart Contract na fasahar Blockchain don hana magudin zabe.

Gwamnati zata dora hukumar zabe akan doran fasahar Blockchain, sai ta samar da yanayi ga masu yin zabe, da zarar mutum ya jefa kuria, nan take kowa zai ga adadin kuri'ar da ake kaɗawa ya karu. Maimakon ace shugaban zabe ne kadai ke ganin adadin masu yin zabe, idan a tsarin blockchain ne kowa zai iya sanin adadin kuri'un da aka kada da adadin kuri'un da kowanne dan takara ke samu a wannan lokacin. Yayin da mai yin zabe ya gama zabensa to babu mai ikon soke kuri'arsa ko satar kuri'ar domin nan take zata shiga jerin kuri'un da ake kaɗawa kuma kowa zai iya gani. Ta hanyar amfani da wayoyi ko kwamfutoci duk wanda ya chanchanci zabe zai iya kaɗa kuri'arsa a gidansa ba sai yaje filin zabe ba, hakan zai ragewa gwamnati kudin da take warewa don sayen takardun zabe sannan zai rage cinkoso da satar bayanan masu kada kuri'a.

Identity management

A hankali ayyukan al'ummah da mu'amalolinsu sunata komawa dijital. Misali a bangaren mu'amalolin kudade, yanzu zaka iya shiga Internet ka sanya bayanan sirrin ka sai ka samu damar shiga asusun bankinka kuma ka tura kudi ga duk wanda kake so. Sai dai idan wani yasan bayanan sirrinka zai iya shiga asusun ajiyarka ya tura kudi batare da bankin sun gane kaine ko ba kai ba ne.

A wannan yanayi, domin magance wannan matsala sai an samar da tsarin da za'a iya tabbatar da mai yin mu'amalar a duniyar Internet. Tsarin distributed ledger na fasahar Blockchain zai taimaka wajen samar da sheda ga kowanne mutum ya yi yin mu'amalar a duniyar Internet. Wannan sheda kamar 'ID card' da kowa zai yi amfani da shi a Internet wanda zai taimakawa bankuna ko kamfanoni gane asalin mai yin mu'amala ta yadda koda wani yasan bayanan sirri na shiga asusunka ba zai iya shiga ba.

FASAHAR BLOCKCHAIN A TSARIN CIBIYOYIN KUDADE DA BANKUNA.

Tun bayan samuwar fasahar Blockchain a 2018, fasahar tayi tasiri matuka wajen juyawa tare da canja yanayin gudanarwa da fannoni daban-daban na ma'aikatu da hukumomi ciki harda bankuna da cibiyoyin hada-hadar kasuwanci.

Yayin da mutum yasan Blockchain da yadda yake aiki, tambayar farko da zata iya zuwa daga zuciyar shi shine; Shin fasahar Blockchain tana da amfani a tsarin bankuna? Idan amsar shine "eh" to ta yaya zamu iya amfani da Blockchain domin inganta masana'antu? Shin fasahar Blockchain zata dawwama ne ko kuma akwai lokacin da zai zo da za'a daina amfani da ita?

Kamar yadda sakamako binciken Harvard Business Review ya nuna, fasahar Blockchain tasirinta a tsarin bankuna kamar tasirin Internet ne a fannin watsa labaru. Idan muka kayi nazari zamu gane, Internet ta kawo babban sauyi ga bangarorin yada labaru. Kafin zuwan Internet labari na daukar lokaci kafin ya zagaye duniya kasancewar radio da jaridu sune manyan kafofin yada labaru a wancen lokuttan. A bangaren bankuna da cibiyoyin kudade na wannan zamani, fasahar Blockchain nada cikakken tasirin kawar da kalubalen da ake fuskanta a wannan fanni.

Cibiyoyin kuɗi da bankuna suna da amfani da manual process wanda hakan ke haifar da rashin tsaro da samun dama gama masu damfara. Mafi yawan lokutta bankuna sukan tara cinkoson mutane sakamakon tsarukan bankuna tsari ne wanda mafi yawansu sai ka bukaci shiga banki sannan sai ma'aikacin banki ne zai iya maka. Misali, idan zaka bude asusun banki, dole sai ka shiga banki domin a dauki bayananka, hanyoyin daukar bayanan da hanyoyin tabbatarwa suna daukar lokaci mai tsayi. Su kansu bankuna suna karkashin babban bankin tarayya ne, wanda shike da ikon samar da tsarin da sauran bankuna zasu bi domin tabbatar da mai asusu da samar da aminci yayin mu'amala ta kudi. Yayin da wani ya saci kudi a asusunka sai anbi matakai da yawa kafin a gano

barawon, a wani lokacin ma ba'a iya gane barawon saboda rashin ingantaccen tsarin tsaro a bankuna.
Mafi yawan tsarukan bankuna yana cin kudi sosai, bankuna da masu asusu suna kashe kudade domin cika dokokin gudanarwa. Misali, idan zaka bude asusun banki dole sai ka kawo hotuna, a wasu bankuna sai ka kawo NEPA bill ko makamancin wannan wanda hakan na Sanya wanda yazo bude asusu kashe kudi sannan yana kawo jinkiri. A bangaren bankuna kuma, dole su samar da ma'aikatan da zasu dinga karba form din masu bude asusu, da bincika form din domin tabbatar da masu bude asusun sun cika dukkanin sharadodin da aka gindaya ga wanda ke bukatar bude asusu a bankin. A wannan yanayi, bankuna suna kashe kudade da yawa wajen tafiyar da wannan tsari. Ba iya wannan ba, akwai qalubale da yawa a fannin cibiyoyin kudade da suka shafi jinkiri, wahalarwa, kashe makudan kudade, rashin yanci da rashin ingantaccen tsaro.

Blockchain yazo da kyawawan tsaruka da ake buƙata ta hanyar ingantacciyar fasahar da ta shafi al'amuran kuɗi. An gina fasahar da ingantaccen tsaro, saukin mu'amala, samar da aminci da bayyana komai a zahiri domin samar da natsuwa da gamsuwa a zukatan al'ummah yayin gudanar da mu'amala. Akwai hasashen cewa bankunan Nigeria nan da wani lokacin zasu rungumi fasahar Blockchain kamar yadda wasu bankuna dake kasashen waje tuni sun jima da amfani da fasahar kuma fasahar ta samar masu da mafita mai inganci da saukin gudanarwa. Ko yaya wannan fasahar zata iya taimakawa bankunan Nigeria?

.Blockchain zai iya magance qalubalen da bankuna ke fuskanta a wajen **payment.**

Payment

Wannan na nufin tsarin da bankuna ke amfani da shi domin tura kudi zuwa wani asusu. Duk abinda ya shafi tura kudi zuwa wani Asusun banki a turanci ana kiransa da Payment.

Da yake da yawan mutane basu san matakan da kudi suke bi yayin mu'amala a tsarin bankuna ba. Domin fahimtar yadda Blockchain zai iya kawo gagarumin sauyi a tsarin tura kudi na banku akwai bukatar mu yi bayanin yadda tsarin mu'amalar kudi ta bankuna yake a yanzu.

Idan nace Mu'amalar kudi ina nufin aje kudi a asusunka, tura kudi zuwa wani asusun ko kuma karbar kudi ta asusun bankinka idan an turo maka. Abu mafi mahimmanci da ya kamata mu sani game da ajiyar kudi a bankuna shine; kudin da ka aje kamar kaba banki bashin kudin ne, bawai banki na aje kudin a asusun ka bane. Da zarar ka kai kudi a jiya sai banki ta rubuta adadin kudin da ka bata wanda suke kamar matsayin bashi, duk lokacin da kazo karba banki zata biyaka bashinka.

Domin sanin yadda musayar kudi ke gudana a tsarin bankuna, akwai bukatar mu sani kowanne asusun ajiya na banki ana kallonsa ta hanyoyi guda biyun nan.

Tura kudi ta hanyar amfani da banki iri daya

Bari mu fara da bada misali mai sauki. Kaddara sunanka Jamilu kana amfani da Union Bank, Ka karbi bashin N10,000 a wajen abokinka Musa shima yana amfani da Union Bank. Kana so ka biya Musa kudinsa ta hanyar tura masa kudin zuwa asusun bankinsa. A wannan yanayi, tura kudin abu ne mai sauki: kawai zaka ce da banki su cire N10,000 daga asusunka su sanya a asusun Musa. Duka wannan zai faru ne ta hanyar tsarin gudanarwar lantarki na Union Bank. Babu kudin da suka shiga bankin ko suka fita, kawai tarawa da debewa ne bankuna suke yi ma'ana daga cikin kundin bayanan adadin kudin da Jamilu ke dasu a wannan bankin, sai banki ta debe N10,000 ta kara adadin cikin asusun Musa.

Domin kara fahimtar yadda tsarin yake bari mu kara bada misali mai sauki. Kaddara kai ne ka bawa Union Bank bashin N20,000, sai Union Bank ya rubuta adadin kudin da ka bada bashin. Abokinka Musa shima yana bin Union Bank din kudade kuma bankin ta rubuta ta aje. Sai ka bukaci Union bank a cikin kudin da kake binta N20,000 kana so a bawa Musa N10,000, sai banki ta debe N10,000 cikin kudin da kake binta

sannan ta kara N10,000 a adadin kudin da Musa ke bin bankin. To kamar haka tsarin tura kudi daga wani mutum zuwa wani mutum dake amfani da banki daya yake.

Tura kudi tsakanin bankuna daban-daban

Wannan hanyar itace mafi ban sha'awa. Kaddara Jamilu na amfani da Union Bank, yana son turawa Musa N10,000 zuwa asusunsa na First bank. Da yake bankin da suke amfani da shi ba daya bane ballantana tsarin tura kudin ya kasance kamar na farko . To taya kenan N10,000 zata fita daga asusun Jamilu na Union bank ta shiga asusun Musa na First bank? Hakan mai sauki ne : Kowanne Banki zai bude asusu da sauran bankuna, ma'ana Union Bank ya bude asusu a First bank, shima First Bank ya bude a Union bank. Idan jamilu ya bukaci Union Bank su cire kudi N10,000 a asusunsa su turawa Musa, Union Bank ba tsabar kudin zasu dauka su kai bankin First Bank domin a sanya a asusun Musa ba. Ga yadda tura kudin zai kasance a tsakanin bankunan biyu.

- Union Bank zasu cire N10,000 daga asusun Jamilu.
- Union Bank za su kara N10,000 a asusun First bank na Union Bank.
- Union Bank zai aikawa First Bank sako cewa sun kara N10,000 a cikin asusunsu suna so su kara N10,000 a asusun Musa dake bankin su.
- First Bank sai ta kara N10,000 a asusun Musa.

Irin wannan hanya ta tura kudi tsakanin bankuna daban-daban ita ake kira da **correspondent banking.** Domin fahimtar yadda hanyar ke amfani bari mu yi takaicen baya ni game da hanyar.

Corresponding Banking

Domin fahimtar ma'anar wannan cikin sauki akwai bukatar musan fassarar kowacce kalma a ma'ana harshe.

- **Corresponding:** Na nufin samar da daidaita to tsakanin abubuwa.
- **Banking:** Na nufin gudanar da Mu'amaloli a bankuna.

Daga Ma'anonin kowacce kalma, zamu iya hada ma'anonin domin mu sami gundarin ma'ana guda daya. Corresponding banking na nufin "Hanyar daidaiton mu'amaloli tsakanin bankuna"

Corresponding Banking: Hanya ce ta dake samar da yarjejeniya tsakanin bankuna ta yadda abokan hurda da su zasu iya yin mu'amalolin kudi ba tare suna da asusu a banki iri daya ba. Galibin wannan hanya tana amfani ne tsakanin misali bankunan Najeriya da bankunan wata kasa. Maimakon Bankunan Nigeria su bude reshe a wata Kasar sai suyi amfani da Correspondent Bank wajen gabatar da mu'amalolin abokan hurda dasu. Za'ayi iya kiran wannan hanya da hanyar wakilci da bankuna ke amfani da ita domin samar da mu'amaloli tsakanin masu amfani da bankuna daban-daban. Hakan na nufin Union Bank ya samar da asusun da zai wakilce shi ma first bank haka shima First Bank din ya samar da asusun da zai wakilce a Union bank. Asusun da bankuna suke budewa a wasu bankuna a matsayin asusun wakilci su ake kira da **Nostro and Vostro account .**

- **Nostro:** Na nufin asusun da wani banki ke dashi a wani bankin. Misali, kaddara kai ne Union Bank kuma kana da asusu a First Bank, sunan asusun da kake da shi a wani banki shine **Nostro account.**

  Vostro account: Na nufin asusun da wani banki yake da shi a bankin ka. Misali, kaddara kai ne Union Bank kuma First Bank nada asusu a Bankin ka, sunan wannan asusun **Vostro account** .

A takaice, asusun da kake da shi a bankina shine **Nostro**, asusun da nake dashi a bankinka shine **Vostro.** Hakan na nufin ina da wakilci a bankinka sannan kaima kana da wakilci a bankina. Idan mai amfani da bankina zai tura kudi zuwa mai amfani da bankinka sai ayi amfani da asusun da nake dashi a bankinka a cire kudin a sanya a asusun da mai amfani da bankina ke son turawa kudin.

Wannan taikataccen bayani kenan game da hanyar tura kudi tsakanin bankuna biyu ta amfani da tsarin **Corresponding Banking.** Hanyar tana da amfani matuka amma tana da matsaloli da yawa.

- Dole sai idan Union Bank na da asusu a First bank haka shima First Bank sai yana da asusu a Union bank, ma'ana sai akwai kyakkyawar danganta tsakanin bankunan guda biyu. Idan ya kasance Union Bank bashi da alaka da First Bank to Jamilu ba zai iya turawa Musa kudin ta asusun bankinsa na First Bank ba, dole sai dai Idan Jamilu zai bude asusun First Bank shima. A wannan hanyar ta **Corresponding Banking** Dole bankuna su zam suna da alaka da juna idan ba haka ba to sai dai Jamilu ya bude asusu a kowanne banki idan yana so ya dinga tura kudi zuwa asusun bankuna daban-daban.

Wani zai iya tambaya ta wacce hanya Union Bank zai turawa first Bank sakon bukatar a cire kudi daga asusunsa a sanya a asusun Musa cikin kankanan lokaci haka? Idan ya kasance dole sai Union Bank sun tura sako sun jira sakon ya isa zuwa first bank sannan first ta sanya kudi a asusun Musa to abin zai dauki lokaci mai tsayi sannan zai wahalar. Karkashin wannan akwai Network din da bankuna ke tura wannan sakona umurni cikin sauki, watau ta hanyar amfani da **SWIFT.** Duk da ba barinmu muyi bayani akan gaba daya tsarin bankuna da yadda suke gudanar da ayyukansu ba, wannan bayanin da muke yi muna yine domin kara fito da bayanin yadda Blockchain zai kawo sauyi a tsarin bankunan Nigeria. Bari mu dan yi takaicen bayani game da **SWIFT** domin ya sake fito da yadda tsarin Corresponding Banking yake aiki.

SWIFT: na nufin cibiyar dake samar da sadaukarwa tsakanin bankuna ta yadda zasu iya yin aiki tare da juna don isar da mu'amalolin kudaden masu hurda dasu cikin sauri. Bankunan dake fadin duniya suna bukatar wata kafar sadarwar da zata hadu su guri daya su dinga tuntubar juna da da biyan bukatun abokan hurda da su cikin sauri. Bisa wannan dalilin aka samar da kafar sadarwa ta **Swift.** Kafin samuwar cibiyar sadarwar SWIFT, bankuna da cibiyoyin hada-hadar kudi sun dogara da tsarin da ake kira **TELEX** domin musayar kudade a tsakaninsu. Tsarin **TELEX** na haifar da jinkiri, kuma tsarin bashi da tsaro da ake buƙata a wannan lokaci da fasahar zamani ke samun ci gaba cikin sauri.

SWIFT ba wai yana daukar kudi daga Union Bank ya kai first bank bane. Network ne banki Union Bank ke amfani da shi kuma First Bank ma ke

amfani da shi. Idan ya kasance sai banki Union ya tura zako zuwa bankin first bank sannan banki first bank ya yi abinda Union Bank ya bukata, hakan zai haifar da jinkiri. Maimakon haka da yake Union Bank na amfani da **SWIFT,** Shima First Bank na amfani da shi, idan Union Bank ta tura cire kudi daga asusun Jamilu sai ta tura zuwa asusun Musa na First bank. Ta hanyar Swift din da zarar union bank ta turo kudin to kamar ta turawa first bank sakon bukatar a cire kudin daga asusunta a sanya a asusun Musa ne. Cibiyar sadarwar sune zasu samar da wannan sadarwa cikin sauri.

Kwatankwacin misalin yadda **Swift** yake a duniyar mu ta zahiri shine; Misali, Jamilu da musa makafta ne sai suka yi yarjejeniyar akan Jamilu zai shuka fulawa gidan Musa shima Musa zai shuka fulawa a gidansa amma kowanne su shi zai dinga bawa fulawar da ya shuka ruwa da kansa. Maimakon sai Jamilu ya dauko ruwa daga gidansa ya shiga gidan musa don bawa fulawar da ya shuka a gidan musa ruwa, sai suke amfani da pipe na ruwa wadda musa zai iya bawa fulawarsa dake gidan jamilu ta hanya zuba ruwa a pipe (bututu) din nan take ruwan ya isa gun fulawarsa ba tare da ya shiga gidan Jamilu ba.

Yarjejeniyar da Jamilu suka yi da Musa akan kowannensu ya shuka fulawa a gidan dayen misali ce na tsarin **Corresponding Banking**. Fulawar da musa ya shuka a gidan Jamilu misali ne na **Nastro account**. Fulawar da Jamilu yake da ita a gidan Musa misali ne na **Vostro account.** Magungunar ruwa na pipe da suke amfani da ita wajen tura ruwa daga gidajensu kai tsaye ya isa inda fulawarsu yake misali ne na **SWIFT NETWORK**. Idan ya kasance Pipe din da suke amfani da shi ba kai tsaye ruwan ke tafiya ba, akwai wanda suke aikin tura ruwan idan jamilu ko musa sun tura, masu aikin tura ruwan su bukaci a biya su kudin aikin su. To kamar haka idan Jamilu ya turawa Aminu kudi zuwa asusunsa na wani bankin daban, tura kudin nan dole sai Jamilu ya biya saboda shima bankin sai ya biya sadaukarwar.

Ka kaddara a ranka, tsarin tura kudi tsakanin bankuna daban-daban da ake kira Corresponding Banking yana faruwa ne ta karkashin kasa ta hanyar cibiyar sadarwar ta Swift. Kasancewar ta hanyar amfani da na'ura ne to mu'amalar na gudana cikin kankanan lokaci.

Idan Jamilu da Musa duka suna amfani da Union Bank ne, Jamilu zai turawa Musa kudi ba tare da an caje shi ko sisi ba. Amma idan ya kasance suna amfani da banki daban-daban, idan jamilu ya turawa Musa kudi sai an caje shi wasu adadin kudi. Dalilin wannan cajin shine; saboda bankin da Jamilu tayi amfani da SWIFT wajen tura kudin. Misali, kamar ace Union Bank ta yi amfani da layin sadarwa na MTN ne ya turawa First Bank sako, kaga dole MTN zata chaji Union Bank kudi, Union Bank kuma zata Chaje ka kudi ita ma.

Dangane da misalin yadda Jamilu yayi amfani da asusunsa na Union bank ya turawa Musa N10,000 a asusunsa na First Bank, matakan da kudin suka bi kafin su shiga account din Musa kan iya haifar da jinkiri ta hanyar amfani da Corresponding Banking. Wannan hanya tana bukatar ayyukan a kalla mutane guda huɗu. Mutum na farko shine Jamilu, na biyu Musa, na uku, first bank, na hudu First Bank sannan mutum na biyar shine Central Bank. Hakan zai haifar da jinkiri kasancer matakai sun yi yawa, hakan zai haifar da rashin tsaro saboda baiwa gaba daya matakan nan biyar tsaro a lokaci daya zai yi wuya, hakan zai haifar da tsadar kudi kasancewa mu'amalar ba zata gudana ba sai anyi amfani da kafar sadarwar SWIFT.

A wannan yanayi fasahar Blockchain tana da tasirin magance qalubalen da bankuna ke fuskanta kamar haka.

Fraud Reduction (Rage damar yin damfara) :
Tsarin Centralization da bankuna suke amfani da shi ya taimaka hackers (masu kutse) wajen samun damar damfarar banki ko masu ajiyar kudi a bankin. Kusan kowanne tsari na bankuna idan zaka dubu zaka ga akwai Centralization hatta tsarin amfani da Corresponding Banking. Kafar sadarwar SWIFT itama centralization ce, domin ita ce ke sarrafawa tura kudi a tsakanin bankuna. A cikin database na SWIFT ake aje bayanan da suka shafi mu'amalolin kudi da aka yi musayarsu a tsakanin bankuna. Kasancewar Hackers sun san ana aje bayanan a Database guda daya zasu maida hankalinsu wajen kokarin ganin sun yi kutse. Da zarar Hackers din sun sami damar yin kutsen to zasu iya wawushe kudaden al'ummah.

Fasahar Blockchain, amintaccen, fasaha ne mara lalacewa mai aiki akan tsarin bayanai da aka rarraba, maimakon bayanan mu'amaloli su tattara a database daya a fasahar Blockchain dukkanin bayanan ana raba su ne gurin kowa. Tunda an rarraba bayanan, babu damar hakar su hari gurin tattara bayanai daya.

Dukkanin bayanan mu'amaloli suna zama a cikin block na fasahar Blockchain, idan hackers suka yi kokarin kutsawa cikin block daya to gaba daya block din za su nuna alama. Dole sai idan hackers din zasu iya yin kutse a kowanne block a lokaci daya kafin su sami damar iya sata. Hakan kuwa ba zai taba yuyuwa domin blocks din suna a kwamfutoci daban-daban na mutane ko ma'aikatun dake amfani da fasahar Blockchain din.

Know Your Customer (KYC)

Wannan tsarine na aiwatar da ganowa da tabbatar da asalin abokin hurda (Customer) yayin buɗe asusu. Wajibi ne bankuna su tambayi bayanan sirri domin su tabbatar da duk mutumin da yazo bude asusu, bayanan sun shafi cikakken sunan shi dake kan katin shi na zabe ko na dan kasa, cikakken adreshin shi, shekarun shi, hoton Passport na shi, jinsinsa, yaren shi, , kasar shi, bayanan shafi wanda zai gaje shi da sauran su. Duk bayanan da zai taimaka wajen tabbatar da mutum banki zasu dauki bayanin su aje.

Waɗannan matakai suna daukar lokaci mai tsayi kuma dole ne a aiwatar da su a kowane banki da cibiyoyin kuɗi. A cewar wani binciken na Thomson Reuters, yawan kudaden da aka kiyasta wanda tsarin rejista na KYC ke ci yakai kusan dala miliyan 60 zuwa dala miliyan 500 kowace shekara. Mahimman dalilan da su
Suka wajabta ake yin KYC a bankuna da cibiyoyin kudade shine domin a dakile safarar kudade da amfani da kudaden wajen daukar nauyin ta'addanci, sannan domin ayi amfani da bayanan wajen kama mai laifi.

A halin yanzu, kowanne banki na buƙatar shigar da bayanan KYC na kwastomominsa a kundin rajista na bankin, wanda za a iya amfani da shi don bincika bayanan sabon kwastoma ko tsohon kwastoma. Duk bankin da kaje zaka bude asusu sai an dauki bayananka, idan banki goma kake da su sai kowanne banki ya dauki bayaninka maimakon ayi amfani da bayanin banki daya. Ta hanyar amfani da fasahar Blockchain daukar bayanan kwastoma da binciken bayanin shi zai zama mai cikakken yanci, idan banki daya ya dauki bayaninka to ya ishi duk bankin da kake son budewa. Hakan zai rage kashe kudade da bata lokaci wajen daukar bayani iri daya da bankuna ke yi.